



सत्यमेव जयते

MANAGEMENT OF ZOOS IN INDIA

Report of
The Expert Committee on Zoos

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GOVERNMENT OF INDIA
INDIAN BOARD FOR WILDLIFE
(Department of Agriculture)
MINISTRY OF AGRICULTURE
NEW DELHI

MANAGEMENT OF ZOOS IN INDIA



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SUMMARY

1. Introductory

The Committee visited some of the important zoos, sanctuaries and national parks in the southern, eastern, western and northern parts of the country and discussed the subject chiefly relating to its terms of reference with the zoo and forest officials as well as with the people in the trade chiefly relating to the zoo animals. It also drew upon the experience and knowledge of other zoo officials who had kindly replied to the questionnaire circulated among them and also the expertise of its members who had visited most of the Indian and some well known foreign zoos. As far as possible a consensus of opinion was obtained and no single member need be held responsible for an opinion or a recommendation.

2. Historical

The zoo movement in India is one of the oldest in the world, the first zoo in the present day concept, having been set up in Madras in 1855 followed by Trivandrum (1857), Bombay (1863), Calcutta (1875), Jaipur (1876) and Udaipur (1878) in so far as the last century is concerned. In the post-independence era also the movement received an impetus and a number of important zoos were set up such as the Municipal Hill Garden Zoo, Ahmedabad (1951), Delhi Zoological Park (1955), Himalayan Zoological Park, Darjeeling (1958), Nehru Zoological Park, Hyderabad (1959), Assam State Zoo, Gauhati (1960), to mention only a few. Altogether there are, in the country, 47 zoos, but of these only 26 are fairly big (Append. I & XIV).

3. Classification

Objectives for the establishment of zoos have changed with time. From mere entertainment and display of "wonders of nature", newer responsibilities have been added such as mass-medium of education, enquiry, research, tourism and conservation of threatened species. The Committee, therefore, felt that it was quite an exercise to give a classification of zoos—a task which was in the terms of its reference—and the Committee craves indulgence of the readers connected with various zoos, especially when there are no accepted norms or standards for classification of zoos. There are several factors which contribute to the overall makeup, utility and image of a zoo. Though the importance of these factors can be recognised their value cannot be rigidly quantified. However, the Committee took into account the following factors: area, administrative pattern, number of visitors, number of species, method of display, breeding record, veterinary facilities, amenities to the public, educational programme, research facilities and other special features, such as children zoo and safari park etc. (Part II.1 and Appendix II).

4. Administrative Pattern

A great diversity of administrative pattern of zoos in the country was observed, as may be expected in

a vast country like ours with different standards of education and varying objects of management. Irrespective of its merits and demerits, the Committee felt that time has come when for better co-ordination and development of better standards, it would be desirable to have as close and uniform pattern of administration for various zoos as may be possible. The staff and administrative set up for different categories (A, B & C) of zoos have been suggested (Appendix III) and their mode of recruitment, including the need for personnel management, examined in details (II.2). The overall consideration with the Committee has been the special needs of the living beings on either side of the fence and the desirability of decentralisation of power to meet the special situation that prevails in a zoo.

5. Procurement, Capture and Transport of Animals

Private dealers and to a lesser extent Government agencies are the main sources of supply of animals (including birds, reptiles, amphibia, fish, etc.) to Indian zoos. Donation and exchange of animals between various zoos is scarce or very irregular. Most of the trade in Indian animals is carried out in the northern and eastern regions, the largest animal market being located in Calcutta. However, the majority of animals from this market are exported and insignificant percentage is utilised by Indian zoos, chiefly because the supply is restricted to such animals, as may be already available with them. Attempts to capture animals are few and far between and the non-traditional animal that one may see in a zoo is often due to chance capture and the initiative of the zoo officer in regard to its quick purchase (II.3.1).

Capture and supply of animals for export and/or for zoos is a means of livelihood of weaker section of society and no statistics are available for the country in this regard. The methods of capture and transport were also looked into and the Committee felt that much of the cruelty and loss of life could be avoided by improved methods of capture and transport facilities by authorities, particularly the railways. Keeping various factors in view the Committee is of the opinion, which was also supported by various forest authorities, that capture of animals should be taken up by governmental agency which should include a team of workers specialised in the capture of animals by modern methods (II.3.2. & 3.3).

Exchange of animals between zoos in India is limited mostly to indigenous and to a very small extent to foreign animals due to restricted number of foreign animals in Indian zoos and, therefore, paucity of surplus stock for exchange. It is, therefore recommended that exchange of animals between recognised zoos in India should be liberal and bereft of commercial considerations and that to meet these objectives there should be greater communication between zoo workers. Liberal import policy and adequate financial provisions (II.3.4) are needed to improve the range of display.

6. Health and Hygiene in Zoos

Hygiene and sanitation should be of supreme consideration in the mind of a zoo superintendent but he requires for this purpose adequate open space for the animals, uncontaminated water and diet, proper shelters that provide environment as close to natural habitat as possible, adequate companionship and means to satisfy herd instinct in such species as are known for it. Adequate funds are needed for all these and the adage that prevention is better than cure should further lend support to it (II.4.2).

Veterinary care would be nonetheless, required for the animals, although our knowledge of this science is largely based on domestic animals. In most zoos sufficiently equipped hospitals and facilities for quarantine, isolation of species, clinical testing etc. are lacking. It is recommended that larger or higher category of zoos should have well-equipped hospitals and all the other arrangements that go with the handling of wildlife, so also the quarantine facilities and isolation (II.4.3). It was further considered desirable to arrange for a special course of training for veterinarians to deal with zoo animals by collaboration between a few veterinary colleges and selected zoos in the country (II.2.2).

7. Disposal of dead animals

No dead animal should be disposed of without ascertaining the cause of its death. Post-mortem records and history sheets of the animals, the proformae for which are given in the appendices for uniformity's sake (Append. IX, XII—XV). Proper use should be made of the rare or valuable specimens that die in the zoo, keeping in view, however, the advice of the veterinary and sanitary staff. A taxidermist may be provided in each large zoo and standing arrangements made with various local zoological and veterinary research institutions and colleges to avail of the material for research purposes. Natural History museums, where possible, may also make use of the specimens. When not required by such institutions the pelt should be salvaged by the zoo staff who should have preliminary knowledge of taxidermy of keeping record of the required measurements. The temporarily stored skins may, however, be, disposed of (by sale/auction) as early as possible. (II.6.4).

For disposal of the carcasses the zoo should maintain incinerators, if possible. In the alternative a properly fenced burial ground which should be away from display area, may be provided. In no cases the carcass be left unattended and should be immediately burnt if the post-mortem examination reveals any clue of an epidemic causing disease (II.6.6.8).

8. Maintenance of Law and Order in Zoos

The Committee was informed of a great many offences committed by some of the visiting public and has suggested remedies—none of them can, however, be exhaustive, such being human nature. All the same with education, co-operation from the public and with adequate powers given to zoo authorities, much of the present day malady could be decimated. Suggestions regarding such measures and draft proposals for a civil

law have been suggested by the Committee as general guide-lines (II.7 & Appendix XVIII).

9. Powers of Zoo Directors

Zoo is a unique institution in as much as it has extensive area, employs a large staff and above all has the responsibility of looking after a variety of wild animals which are totally dependent on the efficiency of the management. Timely action on the part of the latter will save many a valuable specimens of wildlife. Adequate powers are, therefore, considered essential for the head of a zoo for its proper management. Moreover, a large number of people from different walks of life visit the zoo and have different expectations from the zoo authorities. Young children want entertainment, satisfy their curiosity and gather knowledge in the process. The scholars of natural history wish to study the animals on their own. The general public, though unknowingly, gathers a great deal of knowledge which it would be otherwise difficult to impart to them in short span of time. Delays in meeting requirement of the public are, therefore, to be avoided. For this purpose also adequate powers should be granted to zoo directors, who would in turn delegate such powers, as are necessary, to the men at spot. From the discussion that the Committee had with a number of zoo directors and officers-in-charge of zoos, it was evident that one of the major factor responsible for lack of progress had been the sanction of adequate powers, both financial and administrative, in the discharge of their duties. Zoo is, therefore, one institution where red-tapism must be banished. Taking account of the above, the Committee has given in Appendix VII, a draft of such powers which in its opinion may be delegated to the zoo directors. In recommending the same, it may be mentioned that the overriding consideration has been the betterment of the zoos rather than raising the personal status of the incumbents.

10. Collection and Distribution of data

The Committee went through this question very carefully and recommended that the following registers or cards may be maintained by each zoo: (i) Animal Stock Register; (ii) Animal History Card; (iii) Daily Reports; (iv) Diet Sheets; (v) Treatment Sheet and Registers; (vi) Report and register of post-mortem and (vii) Stud Book. Proformae for the above have been given in the appendices with a view to bring out uniformity in respect of maintaining the records in different zoos in India and it is hoped that these would be adopted by different zoos in India.

It was further considered necessary that exchange of collected information as well as news about current and forthcoming events with regard to Indian zoos should be made known to as many zoo authorities and lovers of wildlife as possible. The Committee strongly endorsed the proposal of the Zoo Wing of the Indian Board for Wildlife that a Zoo Bulletin be issued from Delhi which should give the required information. This step should also bring about a sense of unity and develop more co-operation amongst different zoo authorities. In view of the large number of people getting interest in zoo management, the Committee felt that it would be useful if a comprehensive

zoo manual was compiled and made available to the present and future zoo managers.

11. Financial Agency for Zoos

From the foregoing it is evident that if improvements are to be brought about in different zoos in India more funds would be needed than has been the case so far. By and large the revenues earned from entry fees, renting out space to restaurants and collection of grass, though meagre in most cases, all go into general revenues of the state or central government, as the case may be. Exceptions are, however, not lacking; as for instance the Alipore zoo in Calcutta which is run by a Management Committee receives the salary of senior officials from the state government while the rest of the expenditure, both with regard to the junior staff, keepers, labour, feeding and upkeep of animals and the garden are met out of the entry fee, rental etc, that are received by the zoo. By and large, however, zoos are run by grant from the government and public institutions, such as municipalities etc. and the annual budget for a small zoo, may be as little as Rs. 8,000 or as high as Rs. 25,00,000. Ever increasing cost of maintenance would require the amount to be increased even if the present day low standards are to be maintained. The object of the Committee being to improve the standard, it is recommended that a central financing agency be established to support the important activities of zoos in different parts of the country. This agency may be called the "Zoo Grants Commission" with funds placed at its disposal by the Central Government from the general revenue. (Incidentally it may be mentioned that the latter runs into 70/80 crores a year). A draft composition of the Committee, its responsibilities, the mode of disbursing the grants and of offering assistance for research, conservation and development as well as other responsibilities of the Commission are given in the report (II.10.1-10.9).

12. Policy of Zoos

In part III of the report, the Committee has given its views on the policy for various kinds of zoos that are in existence in the country or that may come into being in the future. High priority has been given to the conservational, educational and research aspects of the zoo. Recreational amenities for the local public and foreign tourists are also adequately dealt with (III.1).

13. Working hours, Publicity and Public Relations

These are some of the important aspects, which the Committee wishes to deal in the report, because during the course of discussions with various zoo authorities, these items came up again and again for discussion and were considered to be significant. It was considered necessary that the zoos should observe weekly closures, which would be beneficial to both the animals as well as to the workers in the zoo who would avail of the closure for shifting of animals and for thorough cleaning of the cages, moats etc.

Publicity is a very important aspect of modern zoo management. In order to attract the lay public as well

as the educated people, the visiting foreigners and the school children, it is necessary to adopt all possible means of publicising the activities of the zoo and attract them to the zoo as often as possible. Certain suggestions in this regard have been detailed in the report. It is also suggested that a public relation officer may be provided in large zoos to assist both the management as well as the visitors coming to the zoo. Basic amenities which are required by visiting public have also been listed. These include for instance, convenient public transport to the zoo, parking facilities, public telephones, cloak room facilities, adequate drinking water supply, guide books and maps, shelters against sun and rain and earmarked picnic plots, etc. To increase interest of the visiting public, it is also suggested that souvenir shops may be opened which would sell surplus pet animals, models, picture post-cards relating to the zoo, and also offer other amenities to the children, such as prams and push-carts on hire, children zoo, etc. Lecture guides may also be provided where finances permit and so should the first-aid facilities be made available to the visitors.

14. Educational activities in zoos

It was felt that increasing role of zoos in imparting education in natural history to visitors be recognised as a regular activity of a zoo. Zoo educational officers conference should be held regularly once this activity becomes established. The prime objectives of such a programme have been listed in the report with special reference to meeting the need in the country to develop zoos as a medium of mass-education of common people (III.3).

15. Miscellaneous Matters

The Committee also considered matters, such as transfer, promotions, incentives and reprimands, entry fees etc. with special reference to the conditions prevailing in different zoos in the country. It was felt that while transfers are desirable between members of the staff of different zoos, it was not desirable to transfer (which happened in practice at short intervals) people if they had been appointed on deputation from other services or states in the country. To check this, a system of proforma promotion may be adopted liberally and incentives given for good work done, especially when the nature of the job in a Zoo is attended with hazards of dealing with wildlife. Neglectful acts should also be likewise punished and the overall interest of the zoo should reign supreme.

The question of entry fee was raised time and again when the members of the Committee met other zoo authorities. The Committee felt that a reasonable charge for entry fee may be made but it should not normally exceed Re. 1 per adult. The charge may accordingly be reduced in lower categories of zoos. Besides yielding some revenue, it would help in assessing the increase in public interest and also help in keeping out the lawless element to some extent. However, generous concessions should be made to school children and college students coming in groups and members of natural history societies as well as the physically handicapped individuals.

PART 1

1. PREFACE

1.1 The importance of zoos in educating the masses on wildlife cannot be over emphasised. The role of zoos in conservation of many rare forms of wildlife gets prominence in a country like ours where phenomenal growth of human and cattle population has ravaged the habitat to threaten their very existence in the wild. The part played by zoos to provide an inexpensive, efficient, thrilling and refreshing pastime is too well known.

1.2 Several zoos have come into existence in India since the middle of the last century. Even though, most of them might have fulfilled the requirements of the time, they have to keep pace with modern developments in view of the changing concept of the role of zoos. A few good zoological parks have been established after independence as a result of increasing

interest in wildlife and wildlife conservation among the thinking public. However, proliferation of zoos is not necessarily the right step towards wildlife conservation. Consequently, the Indian Board for Wild Life decided to find out the existing status of zoos in the country and make suitable recommendations to formulate norms and guidelines for improving the standards of existing zoos as well as for setting up new zoos in future. A resolution to set up an Expert Committee to go into the question was adopted during the IX Session of the Indian Board for Wild Life in November, 1972. The Union Government accepted the above recommendation of the Indian Board for Wild Life and set up an Expert Committee on zoos under the Ministry of Agriculture (Department of Agriculture) letter No. J-11022/3/72-FRY/WLF dated the 19th June, 1973. The composition and terms of reference have been given in Appendix 1.

2. INTRODUCTION

2.1 In view of the limited time at the disposal of the Committee, it was decided to group the zoos of the country into four zones—Southern, Eastern, Western and Northern and to visit one or more zoos in each zone. It was also decided to meet as many zoo directors, veterinarians of zoos, heads and senior officers of the forest department, chief wildlife wardens, trappers, traders in wildlife, exporters etc. as possible for collection of basic data on the existing zoo management practices and suggestions on the various terms of reference were also invited from chief conservators, state wildlife wardens and other persons closely connected with the zoo management either in the past or currently. A serious attempt has been made to study the practical problems of zoo management by discussions with the managerial and maintenance staff and to collect all shades of opinion before arriving at conclusions.

2.2 For the southern region, the first meeting of the Committee was held in Mysore so as to coincide with the second meeting of Zoo Sub-Committee of the Indian Board for Wild Life, and to obtain the views of the members of the latter Committee relating to the terms of reference and other connected matters in zoo management. Visits to Mysore zoo, Bandipur sanctuary and Bannerghatta Safari Park (which was being established) were also made. Discussions were held with the chief conservator of forests; director, wildlife preservation; officials of the zoo and wildlife sanctuary, leading traders in wildlife and a circus proprietor. The zoo at Madras was also visited by one member of the Committee.

2.3 The second meeting was held in the eastern region at Calcutta and Bhubaneswar with visits to Alipore Zoological Garden, Calcutta and Nandankanan

Biological Park, Bhubaneswar. Discussions were held with the chief conservators of forests and other senior forest officers, wildlife preservation officers, trappers, traders and at both the meetings, the directors, deputy directors, curators, superintendents, veterinary officers, chief wildlife wardens, naturalists, senior forest officers, animal trappers, traders etc. were invited to discuss all aspects and problems of zoo management to note their suggestions.

2.4 The third meeting was held in the western region at Jaipur and Ahmedabad with visits to respective local zoos. At Jaipur, the representative of the high-altitude zoo from Simla (Himachal Pradesh) had also been invited along with all the zoo superintendents of Rajasthan—Jaipur, Jodhpur, Udaipur, Kota and Bikaner. Consultations were held with all the senior officers of forests and wildlife departments. A few members visited Sariska sanctuary also. At Ahmedabad too, the officers in-charge of zoos at Bombay, Junagadh, Baroda and Amreli attended the meeting. Detailed discussions were held with the superintendents of all the zoos and officials of Forest Departments intimately connected with sanctuaries and zoos. In addition, one member visited Junagadh zoo and Gir sanctuary and held discussions with the chief wildlife warden of Gujarat State.

2.5 The final meeting was held for the northern region at Kanpur with visits to Lucknow and Kanpur zoos. Here too, detailed consultations were held with the chief conservator of forests, the chief wildlife warden and zoo officials.

2.6 Since the Committee had at its disposal the services of members who were incharge of a few zoos and each of them had earlier visited several zoos

in the country and abroad, the practical knowledge of these members had to be put to use, for want of time to visit more zoos by the Committee as such. During the meeting at Kanpur, the replies received to the questionnaire, which had been widely circulated earlier, were studied, the suggestions tabulated and decisions arrived after detailed discussions on various aspects of the subject of zoo-management in the country.

2.7 The itinerary followed by the Expert Committee is given below:—

| | | |
|--------------------|----------------------------|---|
| <i>1st meeting</i> | 8th August, 1973 | Meeting at Mysore and visit to Mysore Zoo. |
| | 9th August, 1973 | Visit to Bandipur sanctuary. |
| | 10th August, 1973 | Visit to Bannerghatta Safari Park. |
| | 12th August, 1973 | Visit to Madras Zoo (By Chairman). |
| <i>2nd meeting</i> | 22nd and 23rd August, 1973 | Visit to Alipore Zoo; New Market; Calcutta; Private zoo of Shri Mullick at Calcutta and meetings. |
| | 24th and 25th August, 1973 | Meeting at Bhubaneswar and visit to Nandankanan Biological Park. |
| <i>3rd meeting</i> | 13th September, 1973 | Meeting in Jaipur and visit to Jaipur Zoo. |

| | | |
|--------------------|----------------------|--|
| | 14th September | Visit to Sariska sanctuary. |
| | 15th September | Visit to Municipal Hill Garden Zoo, Ahmedabad. |
| | 16th-17th September, | Visit to Junagadh zoo and Gir Lion sanctuary (One member only). |
| <i>4th meeting</i> | 10th October, 1973 | Visit to Prince of Wales Zoological Garden Trust, Lucknow. |
| | 11th-14th October | Visit to Kanpur zoo and final meeting for compilation discussions and compilation of data. |

2.8 The Committee decided to divide the report, into four parts. Part I has been devoted to the preface, introduction, acknowledgements and role of zoos. The terms of reference have been dealt in Part II. The sequence of the terms of reference have not been strictly followed to enable related matters to be dealt together. Since it was realised while formulating the questionnaire and during discussions with several officers that a few other matters which were also important from the point of view of sound zoo management could not be ignored, these have been included in Part III. The Chairman of Indian Board for Wild Life, Dr. Karan Singh, when approached for permission to cover the additional points, very readily granted the request.

2.9 The annexures and appendices containing some important data on zoos, standard proformae, proposed Acts and Rules etc. have been included in Part IV of the report.

3. ACKNOWLEDGEMENTS

3.1 The Committee is deeply indebted to Dr. Karan Singh, Chairman, Indian Board for Wild Life, who by his foresight and initiative has rendered signal service to the zoos of India and championed an important aspect of conservation of wildlife and spread of education about the wonders of nature particularly among the masses who visit the zoos in large number. Our thanks are due to Shri Fakhruddin Ali Ahmed, Union Minister for Agriculture for the progressive steps taken in the constitution of the Expert Committee. To Shri K. L. Lahiri, Inspector General of Forests, the Committee is thankful for the constant encouragement given. The spontaneous co-operation of the State Forest and Wildlife Departments and various zoos of the country have enriched the knowledge of the Committee and rendered its task easy.

3.2 The valuable assistance given by the forest, zoo and wildlife staff during the visits of the Committee to Mysore, Bandipur, Bannerghatta, Calcutta, Bhubaneswar, Jaipur, Sariska, Ahmedabad, Junagadh, Sasan Gir, Lucknow and Kanpur; the trappers and

traders who met the Committee and gave an insight into their practical problems and many naturalists who also met the Committee and gave their valuable suggestions deserve special mention. The Committee acknowledges with gratitude the useful suggestions given by the above officers, trappers, traders and naturalists during discussions held in the course of the visits. Special mention has to be made about Sarvashri R. R. Parvatikar and C. D. Krishnagowda of Mysore; K. C. Roy Choudhury, S. S. Mandal, Dr. R. K. Lahiri and Shri Mullick of Calcutta; D. N. Chowdhury, Sinha and R. Misra of Cuttack; K. K. Gupta, Mahendra Prakash, O. P. Mathur, V. S. Saxena, N. K. Khullar, V. D. Mathur, V. C. Sacheti, S. S. Syali of Jaipur; K. L. Mehta of Simla; K. N. Acharya, Reuben David, M. B. Mehta, J. D. Tolia, S. V. Bakshi, Naik and Hiralal P. Shah of Gujarat; J. C. Garkhel of Bombay; G. N. Singh, C. L. Bhatia, H. C. Raizada, R. S. Bhadauria and Dr. Sardar Khan of Uttar Pradesh and J. H. Desai of Delhi Zoological Park, who have all given the benefit of their experience to the Committee and made the discussions purposeful and meaningful.

4. ROLE OF ZOOS

4.1 The zoo movement in India, historically speaking, is one of the oldest in the world. The first organised zoo was set up in Madras as far back as 1855. Trivandrum zoo was established in 1857 and was soon followed by Bombay (1863), Calcutta (1875) and later by Lucknow (1921). Thereafter there was no significant development till after independence. In 1952, the Indian Board for Wild Life recommended that as a means of educating people in wildlife and wildlife conservation, modern zoological parks be set up in major cities. As a consequence, the Delhi Zoological Park was set up in 1955, soon to be followed by the Nehru Zoological Park, Hyderabad in 1959. The youngest to come up is the one at Kanpur where-in the work of construction is in final stages.

4.1.1 Zoos, when these were set up in the last century, were meant mainly to exhibit different types of animals and birds. The accent was on amusement and entertainment rather than on education or conservation.

4.1.2 During the last century, wildlife was abundant in the country. Lions were still being shot around Delhi. Tigers were considered a nuisance, panthers were listed as vermin. Today, they are fighting their last battle for survival. In the modern context, zoos have become repositories and refuges of many an animal that has become almost extinct in the wild. With the new awareness in nature conservation that is sweeping the country and world as a whole, zoos have to play an important role in conservation of wildlife species in general and endangered species in particular.

4.2 It is, therefore, necessary to reorient the aims and objectives of zoo management in the country. The following are proposed to be the principal objectives in setting up and management of zoos in India:—

4.3 **Conservation.**—Endangered species of India and world fauna must be not only displayed but attempts should be made to breed them in large numbers. In this context, some zoos in India have already been successful in breeding endangered Indian species like the one-horned rhinoceros, Asiatic lion, tiger, panther, binturong, white-winged wood-duck etc.

4.3.1 Besides endangered species, zoos should breed and multiply other species of animals with the aim of not only restocking other zoos but also eventually the depleted forests.

4.3.2 Zoos also serve the cause of conservation indirectly by creating in people the interest and concern for rare animals by exhibiting them and educating them about their status.

4.4 **Education.**—It has come to be recognised that zoos are living text books for Nature Study. This concept is now gaining ground in India also.

4.4.1 Modern zoos can form persuasive and powerful means for education of people. Zoos are primarily educational institutions, which offer knowledge of animals with ease to the scientists and students of natural history alike. Even casual visitors of various classes and ages who come to a zoo for pleasure and pastime, absorb a tremendous amount of knowledge with ease.

4.5 **Research.**—Zoos play an important role in scientific research. They are the logical and most convenient places for the study of animals, be it in a laboratory or in an open air enclosure. Large and inexhaustible amount of material is available in the zoos for study in the laboratory or for studies of animal behaviour and social inter-actions in groups of animals in simulated natural habitats. Suitable records maintained in the zoos like notes on their habits and behaviour, stud-books, animal history sheets, autopsy reports etc. contribute to the pool of basic data on various species of animals which is often not available in any other institution.

4.6 **Cultural and ecological functions.**—The wild animal has come to be considered as having a cultural value. It is part of our heritage "to which the whole of mankind, and particularly future generations, have a legitimate claim". Zoological Parks in which these "living items of culture" are displayed contribute to the cultural enrichment of the country as much as a museum, an archaeological monument, a botanical garden, a theatre or any other institution, if not more.

4.6.1 Zoos have a universal appeal to people of all ages and different educational and sociological backgrounds and economic standards. In terms of actual use, zoos more than any other institution, are of more value to a greater number of people in India with the present educational and economic background. Attempts must always be made to encourage wider and purposeful use of zoos by the weaker sections of the people who form the bulk of zoo visitors.

4.7 **Tourism and research.**—Modern zoological parks (including Safari parks) form an additional source of attraction to tourists, both from abroad as well as from within the country. They also provide wholesome recreation to a large number of people by providing an outdoor setting of nature for congested urban population who have none or few healthy recreational facilities. Modern zoos have a good appeal as places of recreation for a large section of the people. The role of this factor should, however, not be overemphasised, as otherwise this is likely to infringe on other important objectives.

PART II

1. CLASSIFICATION OF ZOOS

1.1. General.—There are at present over thirty zoos in India. They have been started at different times beginning from the middle of last century and they reflect the objectives prevalent at the time of their establishment. Some of them have tried to modernise with the changing concept whereas others have not been able to do so. They vary from mere menageries where the animals are imprisoned into cages, to zoological gardens where animals are displayed in spacious enclosures simulating their natural habitat to the modern extensive zoological park wherein animals or groups of animals are housed in large near-natural enclosures with moats as barriers and with necessary amenities to the visiting Public. There is a wide variation among zoos with regard to the extent, method of display, amenities to visitors, administrative pattern, management practices, breeding, conservation, educational programmes etc.

1.2. Classification.—There are no accepted norms or standards for classification of zoos. There are several factors which contribute to the overall make-up, utility and image of a zoo. Though the importance of some of these factors can be recognised, their value cannot be rigidly quantified. Each of these factors has an independent or complementary value in shaping the overall image of a zoo. Since classification of zoos is one of the terms of reference to the present Committee, the factors which contribute to the assessment of a zoo have been identified and a broad classification has been made taking into account the cumulative effect of all these factors. Such a classification naturally becomes artificial and does not hold good for long and has, therefore, to be revised from time to time.

1.3 The factors identified for assessment in such a classification are as follows:

1.3.1 Area.—The expanse of a zoo provides easy opportunity to management by way of making available adequate space for display of animals or animal groups, gardens, lawns, groves, amenities to public and allied services like stores, kitchen, quarantine, veterinary services etc. Even Safari Parks, fodder and cattle farms can be attached to zoo-parks if adequate space is available. An area of less than 50 ha. is considered inadequate according to modern concepts of display of animals in zoos.

1.3.2 Administrative pattern.—The status of the head of the zoo organisation has a lot of bearing on the powers and functions and his ability to take quick decisions for smooth management. Apart from the head of the zoo, the organisation required to fulfil the various functions in the zoo-management has to be taken into account for assessing the status of the zoo.

1.3.3 Number of visitors.—Though it is generally true that variety and range of exhibits and public amenities enhance the popularity of the zoo, factors like proximity to tourist centres, availability of alternative

avenues for pleasure and pastime also govern visitations to the zoo and hence the number of visitors may not be a correct measure of importance of the zoo. Yet well laid zoos are bound to attract large number of visitors and, therefore, the number of visitors constitutes an important factor in determining the status of a zoo.

1.3.4 Number of species.—The variety and range of species exhibited, both indigenous and exotic, is an important factor to assess the value of zoos. It is quite desirable to have a large range of species on display, but this should not be attempted at the cost of their health and other amenities. Too much of crowding, without adequate moving space to inmates as well as visitors, is cruel to the animals. A harmonious balance between the number of species and areas for their display has to be achieved. Unhealthy competition to increase the range of exhibits has to be discouraged especially when conditions to maintain and display them properly cannot be met.

1.3.5 Method of display.—Display of individuals or group of animals in natural surroundings blending with the surrounding areas becomes more impressive than display animals in prison-like cages. Nature simulating enclosures with enough space for normal physiological processes of the inmates are not only hygienic but also desirable from aesthetic point of view.

1.3.6 Breeding record of important species.—Much depends on space, climatic conditions and availability of compatible pairs. But the combined effect of many factors like natural surroundings, good food, proper care for health and hygiene etc., are reflected in the breeding record of animals in the zoo. Due credit has to be given for achievement of success in breeding and rearing of youngones of the rare, endangered and difficult species in captivity.

1.3.7 Veterinary facilities.—Availability of proper veterinary facilities for care of zoo-animals like a well-equipped hospital, a good laboratory etc., go a long way in preventing epidemics and curing endemic diseases. The display of sick, wounded or deformed animals creates a bad impression on the mind of visitors. The mortality rate can be greatly reduced by timely prevention and cure of diseases.

1.3.8 Amenities to the public.—Since zoos are public institutions meant to attract a large number of visitors, it should be their endeavour to provide adequate amenities to the visitors. The common amenities required by public are transport, shelter from sun and rain, lawns, shades, groves, attractive flower-beds, resting places, seats, drinking water, eating places and restaurants, public convenience, cloak-room or left luggage facilities, gifts or souvenir shops, postal and telephone facilities, guides, books, first-aid etc. The zoos providing recreational facilities, especially for children, become more attractive to public. Children like to enjoy buggy, pony, camel or elephant ride in

zoos and also like to see some animals perform for them. But the tendency to subject zoo inmates to perform and convert them like circus animals is not compatible with sound objects of zoo-management.

1.3.9 Educational programmes.—Since educating people in the values of wildlife and the life history of animals, less commonly known to them, is an important object of zoos, educational programmes like conducted or guided tours, radio, television and nature film programmes, library and reading room facilities with books and magazines on wildlife and their ecology, should become important functions of zoo. Concessions given to school, college or educational parties in entry fee and other amenities inside the zoo enhance the educational value, of a zoo.

1.3.9.1 Research facilities.—Properly equipped research unit attached to a zoo enables the management to find out ways and means to improve management and explore the wonders of animal world. Regular contacts with educational institutions, biological re-

search institutions and museums in the neighbourhood ensure fuller utilisation of research material abundantly available with the zoos.

1.3.9.2 Other special features.—The existence of allied facilities like safari park, children's zoo, Natural History Section, museum, nocturnal animal house, reptile house, aquarium, insectarium etc. contribute to increase the scope and educational value of zoos. Hence the availability of these additional facilities enhances the appeal of a zoo to the general public.

1.4 Keeping in view the combined effect of the above considerations in mind, a classification of the existing zoos in India into three categories has been made and given in Appendix II.

1.4.1 All isolated units of deer parks, children's zoos, mini-zoos, safari parks and small collection of a few varieties of animals are classified in a separate category of the so called 'D' category zoos.

2. ADMINISTRATIVE PATTERN

2.1 The diversity of administration in the management of zoos in the country has mainly been responsible for varying standards and lack of co-ordination in the maintenance of zoos. To avoid such diversity it would be desirable to have a uniform pattern of administration for various zoos, as far as possible. In foreign countries, zoos are generally started and run by local zoological societies, funds being obtained by subscriptions, grants from Government or local administration, donations and gate collections. In India, however, there are as yet no such organisations and in view of huge funds required in setting up, it is unlikely that zoos will come forth from such agencies. Zoos in India are, therefore, likely to start only at the initiative of the government or governmental agencies. For guidance and advice in the management of zoos, it is desirable to involve interested and knowledgeable local persons, generally by forming wide based advisory committees. The persons selected as members of such committees should, however, be really interested in and devoted to furthering the objectives of the zoo. It is a fact that the usefulness of the advisory committee will largely depend on the proper choice of its members and so utmost care is needed in this respect.

2.1.1 The requirement of staff for running a zoo efficiently depends on the size and variety of the animals collection, size of the grounds and nature of research and development works in hand. It must be realised that the running of a zoo is a very complex affair and the organisation should be designed and streamlined to meet the situations that may arise.

2.1.2 The director should be a whole-time officer and should be overall incharge of the zoo operations at the site. He is responsible to the governing body which may be the government or a departmental head or a management committee. There must be a second officer to assist the director and to function as incharge in his absence. In category 'A' zoos, the various animal branches should be headed by qualified and trained curators. Their number will depend on the collections maintained. A veterinarian should be incharge of hospital, quarantine, health and hygiene. He will also be responsible for checking the

quality of food. A public relations officer is essential to look after the publicity and public relations and for educational activities. Separate staff is necessary for maintenance of the buildings and gardens. A typical organisational set up for category 'A' zoos is given in Appendix III. In category 'B' and 'C' zoos, the staffing pattern has to be on the same lines but the number at different levels may be reduced to the extent possible without affecting the efficiency of operations.

2.1.3 The heads of category 'C' zoos should be designated as superintendents. For such zoos there may not be a separate veterinarian but a trained veterinary assistant must be provided for. Arrangements for treatment of animals will have to be made with a consultant veterinarian working nearer the zoo site.

2.1.4 In category 'D' zoos, the overall incharge should be a trained superintendent assisted by necessary number of keepers.

2.2 Recruitment and training.—For administrative posts, viz., director and deputy director, it is necessary that selection is done from a wide field from amongst science graduates with biological background. Knowledge of wildlife and aptitude for zoo work should be an important criterion.

2.2.1 A practice in vogue has been to draw suitable persons from government departments such as forest departments and veterinary departments. This has the advantage of getting people with this desired background. But more often than not, after putting some years of service, when they really start being useful, they are required to go back to their parent departments. In the running of zoos, such short term arrangements are not conducive to good management. Continuity of working in a post for a long period has definite advantages in a place like a zoo where the personal equation between the manager and the managed matters a lot. It is, therefore, recommended that officers working well should be allowed or persuaded to continue for as long as possible. It has,

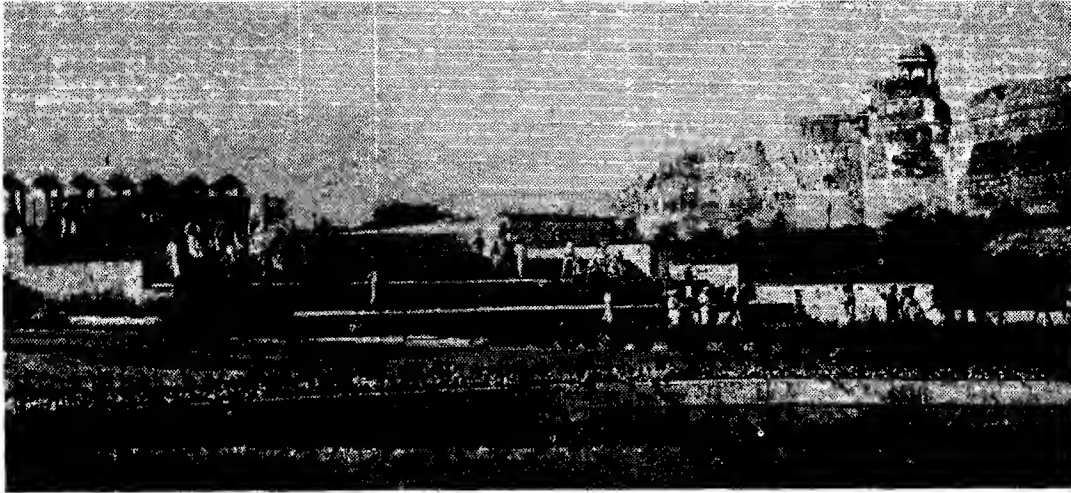


FIGURE 3—Entry gate.

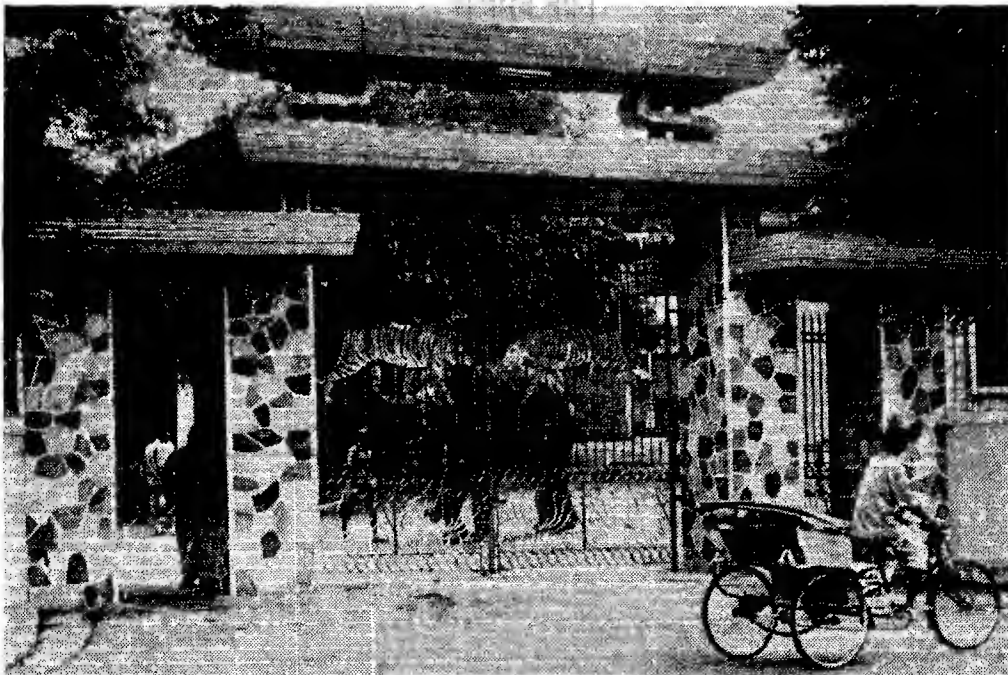


FIGURE 4—Entry gate.

however, to be ensured that the service interests including promotional chances in the parent department of such persons are fully protected.

2.2.2 The curators to head animal branches should be people with adequate background of the work of the branch concerned and should have obtained special training or should be trained immediately after selection. Veterinarians will generally be drawn from the veterinary services on deputation. When requirement is met from open market, the minimum qualification should be a veterinary graduate. As normally a veterinarian receives training with reference to domestic animals only; it is necessary that he should attend special courses for wild animals to be run jointly by a veterinary institution and a category 'A' zoo where such training facilities should be provided. Regarding subordinate staff, whereas supervisory personnel should better be drawn on deputation from various government department, most of the workmen will have to be recruited directly. Recruitment Rules should lay special emphasis on physical fitness and experience in handling wild animals to ensure that only suitable hands are recruited. There should be arrangements for in-service training for the staff belonging to different categories. For this it is proposed that three training centres should be organised to cater for the needs of different regions of the country—one at Delhi for northern region, one at Calcutta for eastern region and one at Hyderabad for southern region. Such training is also necessary for inculcating a sense of discipline in the staff.

2.2.3 It is also necessary that sufficient promotional avenues should be provided for the lower staff. These could be associated with various trade tests and the training courses proposed. In zoos where regular promotions are not feasible in certain categories, it is desirable to have different sub-categories or selection grades.

2.2.4 There are obvious advantages in broadening the outlook of various categories of staff by making it possible for them to visit other zoos. It is necessary to organise inter-change programmes for staff from one zoo to another for fairly long periods, say of three months. This will enable them to obtain first hand practical knowledge of different aspects of maintenance of various kinds of animals such as diets, health, hygiene, handling and dealing with visitors as practised in other zoos. The staff should be given sufficient incentive so that they do not suffer any financial loss.

2.2.5 It is necessary that technical and administrative personnel exchange knowledge between zoos of this country and abroad on reciprocal basis. Cultural exchange programmes should be organised for this purpose just as is being done for educationists (sponsored by Education Ministry) and agricultural and forest scientists (sponsored by Agriculture Ministry). It is understood that at present, besides the Colombo Plan countries, there are about a dozen other countries with which India has cultural exchange programmes and with an equal number of countries on ad hoc basis. It is unfortunate that zoos have not received the desired attention in this respect. It is recommended that a regular exchange programme should be organised for zoo personnel also.

2.3 **Personnel management in zoos.**—Modern zoological parks are designed to be large in size both in respect of area as well as in number of specimens maintained. The area of Nehru Zoological Park at Hyderabad is over 300 acres, that of Delhi Zoological Park over 240 acres. Gauhati and Nandankanan will eventually have equal, if not more area. Kanpur zoo which is nearing completion, spreads over about 190 acres and has scope for further expansion. Many other zoos and safari parks covering larger areas are being planned at Visakhapatnam, Madras, Bangalore, Bombay etc. The zoos at Calcutta, Ahmedabad and Mysore have large collection of animals and birds numbering over 200 species and 1,000 specimens. The collection also contains large number of rare and endangered species which are almost irreplaceable. They contain exotic and costly species which it will be difficult to replace due to high cost and restrictions on imports. The collections also house dangerous and deadly animals like lions, tigers, panthers, poisonous snakes etc. To look after such vast, expensive and dangerous collections and for carrying out various other functions like landscape maintenance, watch and ward, maintenance service, administration, public relations etc., zoos have to have large contingent of staff.

2.3.1 The large number of staff poses problems of personnel management. These sometimes lead to agitations on grievances which cannot be said to be peculiar to zoos alone like permanency, promotions and disciplinary action etc. Zoological Parks are, however, institutions where all normal forms of management have necessarily to be subordinated to the over-riding fact that one is dealing therein with live animals. There is a moral responsibility to look after the dumb and helpless animals since they are entirely dependent on the management for not only their daily food and up-keep, but also for their very survival. Unlike other institutions such as factories, museums, offices etc. zoos cannot be completely shut down or locked-out since the animals must be fed daily and minimum clearance ensured. This fact viz. that the zoos cannot declare lock out, a remedy available to factories and other institutions threatened with an agitation or strike, places a zoo in a disadvantageous position and can be used as a weapon to hold the administration to ransom by unscrupulous and disgruntled elements. Discipline has to be maintained in a zoo where large number of visitors congregate and an act of indiscipline is likely to have an adverse effect on the visiting public. Zoos, therefore, have to be looked upon as services of public utility where agitations and strikes have no place.

2.3.2 It is, therefore, recommended that zoo services should be declared as essential services to enable them to function normally even during agitations and unrest.

2.3.3 At the same time it is essential that maximum possible efforts should be made to avoid any agitation or strike in the zoo as these can harm its interests. The problems of the personnel deserve sympathetic consideration. Animal keepers and other categories of staff connected with animal keeping have problems peculiar to themselves. They have to work

often under unfavourable circumstances. Their duties include:

- (a) unhealthy conditions; since they have to clean up cages etc., or work in impure water;
- (b) health hazards; since they are exposed to diseases like ornithosis, tuberculosis etc., which are communicable from animals to man;
- (c) risks; since they deal with dangerous animals like lions, tigers, panthers, poisonous snakes etc., and are always exposed to the risk of injury, disablement and even death;
- (d) higher responsibilities; since they look after rare and costly animals and any neglect on the part of the keeper can cause irreparable loss;
- (e) public relations; it is a fact that a keeper has to deal daily not only with intractable animals in the enclosures but also with those out-

side. It is often the keeper who comes into daily contact with visitors more than any other member of the staff. He has to patiently answer endless queries, act as a guide and a disciplinarian;

- (f) strenuous work; often the keeper has to work hard and far beyond his normal hours when an animal is sick or required to be transported.

2.3.4 It can thus be seen that zoo staff have to perform an entirely different and more arduous work compared to any other staff in a comparable institution. It is, therefore, necessary that staff dealing with animals in a zoo be given incentives and allowances to compensate for the difficult service conditions. These may include special pay, risk insurance, disability leave, selection grades, more promotional avenues etc.

3. PROCUREMENT, CAPTURE AND TRANSPORT OF ANIMALS

3.1 The major source of supply of animals (including birds, amphibia and reptiles) to zoos in India is through private dealers and government agencies. Donations constitute a small percentage of the total acquisition. Exchange of animals between zoos is at present very irregular due to various reasons.

3.1.1 Most of the trade in Indian animals is concentrated in the northern and eastern regions. The largest animal market is located in Calcutta. The supply for this market comes mostly from Uttar Pradesh, Bihar and Assam. The sources of collection are located as far away as Lucknow and Bareilly in Uttar Pradesh, Patna in Bihar and Goalpara in Assam, to name only a few.

3.1.2 The major supply to this market is meant for export to countries abroad for which quotas have been fixed by the Controller of Imports and Exports, Government of India. The export is mostly for pets in foreign countries and helps as a means of earning foreign exchange. Insignificant percentage of the procurement is utilised for zoos in India. The supply by private dealers to zoos in India is unsatisfactory and limited to animals already available with them. Attempts to capture animals against specific orders are few and far between. Capture and supply of animals is limited to traditional items *i.e.*, show animals and birds like sarus crane, demoiselle crane, hill mynah, parakeets and a number of munias, which through years of long experience have become established as easily procured, stocked and sold. As a consequence, it is often a common sight to see the same animals in most of the zoos in India. This, in turn, generates a demand for these animals and the vicious circle continues. This is not conducive to the advancement of the knowledge of the varied fauna of our country besides giving a monotonous look to the exhibits in zoos.

3.1.3 Occasionally one comes across a non-traditional animal in a zoo. This is due to the chance capture or procurement by a trapper or by a villager of such animal, which finally trickles down to the market. This comparatively rare occurrence generate a demand for it out of all proportions to its intrinsic value and thereby helps to increase in monetary value,

often beyond the means of many zoos in India. The high value obtained for it in an Indian zoo or in a foreign zoo or a pet store, creates a temporary demand which again sets in motion a vicious circle, to the detriment of the animal's continued existence in nature.

3.1.4 The chance of haphazard availability of certain animals and birds and limitations to "traditional items" is reflected in the tenders and/or quotations obtained by zoos from dealers, since purchases have to be made in accordance with the financial rules and regulations. Mostly traditional items alone are quoted for. Other items are either not quoted for or the prices quoted are exorbitant and no time limit for supply is ensured.

3.1.5 Capture and supply of animals for export and/or zoos is a way of life and means of livelihood for various and generally poor trappers and collectors in the forests and villages. It is also the only means of livelihood for a number of petty dealers. At Calcutta, it was reported by some of these petty dealers, who transport the animals and birds from the capture point to the market, that there may be as many as *two lakh families*, mostly belonging to the weaker section of society, dependant on this means of livelihood. Unfortunately, no statistical data is available as to the exact number of people involved or the number of animals and birds captured in the country since no systematic survey appears to have been made by any agency. This Committee also did not have enough time to go deeper into this aspect.

3.1.6 It may not be out of place here to point out that as per the Export Instruction No. 46/73 dated April 23rd, 1973, issued by the Ministry of Commerce (given in Appendix XVII), which lays down the policy for regulation of the export of wildlife and wildlife products for 1973-74, all items listed in Part B of the said instruction are permitted for export since they are included in Schedules II (Part I), III and IV of the Wild Life (Protection) Act, 1972, and the hunting of which is permissible as 'Special Game', 'Big game' and 'Small game'. As per the Act, trapping of animals listed in the above Schedules is also permissible. As such zoos form outlets for the trapped animals, which incidentally skim the surplus and thus

help regulate the numbers in the wild in a much more humane manner than by hunting. Another factor is the comparatively small number of animals required by zoos. It is, therefore, recommended that animals may be continued to be captured on a liberal scale for supply to zoos in India.

3.2 Capture of animals and birds.—For capture of various animals, different methods are used by the trappers. These include pits for rhinoceros, elephant and gaur and ingenious trapping cages for the carnivora like the tiger and the panther, where live bait is kept in one of the compartments and the tiger or the panther lured in. Instances were reported in Rajasthan of trapping of panthers by a "den trap" where a narrow and long den of stone rubble is constructed in the animal's path. The animal is lured by means of a live goat or buffalo calf into the long den and the trap door dropped by a self-operating mechanism to trap the animal inside. Reports were also received of blackbuck and chinkara being captured in Rajasthan, from a jeep or other vehicle by chase. The animal becomes tired after a long chase and just stands still and stares back. It is then picked up and taken. Many animals like gaur etc., are picked up from herds of grazing cattle, with which they get mixed up. Often cubs of clouded leopards and the hoolock gibbons etc. are collected from their 'lair' by tribals. Animals like chinkara, chowsingha, hare, fox etc. are trapped by a net spread across their path and the animals driven into it or by snares kept on the ground and trapped by an alert shikari.

3.2.1 As far as birds like demoiselle crane etc., are concerned, trapping is done with the help of a net and with snares. In Rajasthan, the great Indian bustard is caught by chasing from a jeep and when the bird gets tired and stops stock-still behind a low bush or scrub, it is captured. Sand grouse are caught by the use of moving lights and gongs at night. Small birds like munias and other finches are caught with the help of nets spread on the ground. Partridges, quails etc., are caught in nets with the help of decoys. Birds of prey are often caught by baiting to a net trap with a pigeon or quail on which it swoops.

3.2.2 The various methods in vogue and those which could be gathered from the evidence brought forward, appeared to be old and archaic. No modern method of capture is followed. Modern methods like use of mist nets and capture guns could be tried for this purpose. Before trying out these methods, it is essential to train personnel in the use of mist nets and the capture gun and what is more important, in working out doses of anaesthetics involved in the latter case, under Indian conditions.

3.2.3 The cost of capture gun and related equipment is quite high. They are not available in the country and have to be imported. Capture guns also require a high degree of professional and technical skill and specialisation in working out the types of tranquillisers effective for different animals and dosage in each case in the field. These two factors impose an inhibition on its free use for capture of animals and birds in India.

3.2.4 It is recommended that capture and trapping of animals should be taken up by governmental agency, which should include a team of workers specialised in the capture of animals by modern methods.

Such a team can be set up in each State as a part of its wild-life organisation. The expertise regarding dose etc., available in zoos may be fully used. The team should have personnel trained to look after and treat the animals after capture in the field.

3.2.5 Special care has to be taken to reduce the mortality in animals not only during capture, but also during the period immediately thereafter which is quite crucial. In the case of long-legged birds like the crane, stork, bustard etc., the application of massage with fat and use of hood over the eyes is prevalent among the trappers, who traditionally make attempts to see that the captured animals are transported urgently and in good condition to the market. Similar practices are also sometimes followed in the case of other animals.

3.2.6 It is, however, necessary to reduce the after effects of the trauma of capture in an animal which is mainly responsible for mortality. The use of tranquilliser for this reason deserves to be investigated for various animals. The extra cost involved in administering tranquillisers, would it is hoped, far outweigh the traditional methods by getting a large number of animals in a better condition which would also ensure a longer life of the animal in captivity.

3.3 Transport and handling of animals.—After capture, the second harshest traumatic experience that an animal has to undergo is during its transport from the capture point to the market or to the zoo. It has to contend with strange noises, smells and sights. It is often crammed into a small crate with a number of its fellow travellers and subjected to bumps as the crates are hauled, loaded and dumped into trucks, railway wagons etc. Already weakened by its earlier shocks, the animal is liable to fall prey to the fresh onslaughts due to bad handling. It is stressed that live animals must not be handled like any other cargo or merchandise. This cardinal fact is often lost sight of by all those engaged in transporting the animals to their destinations.

3.3.1 *Surface transport.*—Most animals are transported from capture point to the nearest rail head by road. From interior forest points they are transported often on foot or carts, if the specimen is not large and/or its numbers are not too many. Thereafter most of animals are transported by rail by private parties as well as zoos, since it offers traditionally the fastest and cheapest means of transportation. Transport by air within the country is not yet common.

3.3.2 The volume of traffic in each case is not known since statistics on this aspect are not available. However, there is reason to believe that this is of a fairly high order. It must be remembered that since live animals, often in a weakened condition due to reasons stated earlier, are involved, it must be ensured at all points that transit is as rapid as possible. Delay may be disastrous. The sooner an animal reaches its destination and is placed in competent hands, the better are its chances of survival.

3.3.3 At present a number of inhibiting factors are prevalent, some of which are reviewed hereunder:—

(a) "Wild animals" are usually not accepted in brake-vans, necessitating delay and engaging of special wagons. This places unreasonable

restrictions on movement of animals besides increasing costs and time. All animals, provided they conform to standards of crating and are transported in crates below a specified size could be carried in brake-vans.

- (b) At present live animals are sometimes charged at more than normal rates for cargo. This tempts dealers in particular to send animals in very small crates to save costs. All animals should be charged the same rates as for other cargo. This will encourage dealers to send animals in more spacious crates.
- (c) At present rates charged by railways are according to the weight or size of the crate. This practice encourages dealers etc., to (i) make as small crates as possible, (ii) cram as many animals as possible in the crate. Overcrowding is one of the important factors resulting in mortality of animals in transit. To reduce this factor, it is desirable that crates may be prescribed according to the type and size of animal to be carried. The type and size of crates for different types of animals may be prescribed after detailed investigations. All crates must have proper labels affixed giving instructions to the handlers regarding
 - (a) the nature of the cargo;
 - (b) which side is 'up'; and
 - (c) feeding schedules, watering instructions etc.

The labels should be of standard patterns. This will help in mass production and, therefore, result in lower or negligible cost. Labels should be simple and use symbols which can be understood even by unlettered persons who will be handling them in transit at various points.

3.3.4 The restriction in taking wild animals in brake-vans sometimes results in exorbitant transport costs. Even for one or two animals like tiger or lion special carriages or wagons like V.I.P.s or V.P.P.s have to be hired. These are usually eight wheeler bogies meant for carrying all types of cargo. Often the entire charges of these bogies have to be borne by a party, which for a single animal comes to a large amount especially where animals have to be moved over a large distance. The railways should consider the charging of rates for the animals concerned only and not the entire carriage.

3.3.5 To ensure rapid movement of the animals and to avoid handling (loading-unloading) at points en route, animals should be transported in express or mail trains where such trains run. In other cases they should be transported in passenger trains which run with the least possible change of carriages to the destination. Where animals are to be carried over rail, they should be kept in carriages as far away from the engine as possible to avoid the psychological stress of noise of the engine and the crowd.

3.3.6 Where animals are carried in brake-vans or other carriages, they should be kept in separate compartments and away from other cargo containing strongly smelly articles like fish, meat and meat products, chillies etc. and other cargo which are likely to upset the animals.

3.3.7 The use of tranquillisers during transport by road or rail and air requires to be further investigated and encouraged to reduce shock and thereby decrease mortality.

3.3.8 Insurance of live animals in transit over the railways should also be considered either by the railways or by the insurance companies.

3.3.9 The transport of animals by air is the most suitable means available for most animals. At present transport of animals by air within the country is negligible. This can be ascribed to the following inhibiting factors:—

- (a) The almost prohibitive cost involved. The charges are very high as compared to surface transport. Usually enhanced rates are charged for animal transported.
- (b) In the case of large animals, there are limitations on the size of crates due to the size of the hold in the aircraft.
- (c) Standards of crating are more rigid in this method of transport than in others.

Transport of animals by air must be encouraged so as to reduce mortality en route which is more likely in surface transport due to the larger time factor and hazards of handling. To encourage transport by air it is desirable that transport of wildlife gets priority and concession over other air cargo.

Since zoos usually have rare and limited stocks of animals which they can ill-afford to lose in transit, it is desirable that recognised public zoos be given concessions so that air transport of rare and delicate species may become more prevalent both inside and outside the country. It is learnt that similar concessions are offered by some airlines abroad.

3.3.9.1 The type and design of crates for different groups of animals which can be transported by air requires to be standardised in keeping with the requirements of the animals, strength of crates, limitations on size according to space available in the hold of the aircraft etc. In this case, I.A.T.A. regulations may be followed, with suitable modifications for Indian conditions.

3.3.9.2 It is also desirable that some air line personnel are trained in proper handling, loading and unloading of animals at more important air terminals.

3.4 Exchange of animals.—One of the important methods of stocking and enriching zoological parks with both indigenous and exotic animals is by exchange.

Exchange is carried out between zoos and between zoos and private parties. Exchanges are made normally with surplus animals, usually bred in the respective zoos. However, sometimes, animals not required by a zoo for any specific purpose like breeding, display, study etc., are also exchanged with zoos where such requirements and facilities exist. However, exchange between zoos in India is limited mostly to indigenous animals, and to a very small extent to foreign animals, due to restricted number of foreign animals in Indian zoos and consequently lesser number of such animals becoming surplus for exchange.



FIGURE 5—Pampered Primate—Chimpanzee.

3.4.1 Exchange of animals between Indian zoos at present is not methodical and limited to the chance information received by a zoo director from his colleague through personal communication, discussion during visits and on hearsay. Correspondence is prolonged since most zoo directors do not have adequate powers to carry out the exchange even after agreeing on the terms. They have to obtain sanction of higher authority even in case of simple exchanges involving nominal values. It is essential that in the matter of exchange the opportunity should not be lost by default or delay. Zoo directors should have adequate powers to carry out exchanges of animals. It is also known that often an element of commerce comes into the proceeding which is not conducive to furthering the aims of zoo management. As a consequence, one sees empty enclosures, single animals and monotonously similar exhibits in zoo after zoo.

3.4.1.1 It is, therefore, recommended that exchange of animals between recognised zoos in India should be liberal and based on the principle of mutual benefit, requirement of breeding of animals, research etc., rather than adopting a commercial view of such exchanges.

3.4.2 Where exchange of animals with private parties is concerned, it is desirable to be a little more circumspect. Restricted powers have, therefore, been suggested in Appendix VII for zoo directors in this respect. These powers are, however, necessary in order to permit a zoo director to advantageously exchange animals promptly since usually private parties do not wait for any length of time where live animals are involved. The guiding criterion in such cases should be the need of an individual zoo, taking into account various factors like vacant enclosures, incompatible pairs, lonely animals, existence of research and study programmes etc.

3.4.3 Exchange of animals with foreign institutions, has its own problem which inhibit display of foreign animals in Indian zoos.

It is now well recognised that display of the fauna of the world provides a wider base for education of students and other classes of people and enhances the popularity of the zoos. It is, therefore, necessary to procure selected exotic animals for the zoos in India.

3.4.3.1 In view of restrictions on the release of foreign exchange, it is not always possible for zoos to purchase exotic animals according to their requirements. Hence they have to enter into exchange or barter deals with foreign zoos and parties. This position has been recognised in the Import Trade Control Policy of the Government of India, whereby zoos are permitted to exchange animals with foreign zoos.

3.4.3.2 The procedure for implementation of exchanges is as follows:—

Zoos enter into correspondence with the foreign zoos usually after receiving surplus lists or obtaining information through publications etc. After arriving at an equitable exchange, zoos in India have to approach the Ministry of Agriculture through their respective governments. The Ministry of Agriculture examines the proposal and thereafter writes to the Ministry of Commerce for issue of an import permit. Simultaneously, the Ministry of External Affairs is also addressed in the matter. The Chief Controller of Imports and Exports thereafter addresses the local import and export authority. The zoo has then to apply in a prescribed form to this authority for issue of the permit. The procedure normally takes a fairly long time to go through and in the meantime the foreign parties who do not have to go through such procedures are usually impatient to send the animals due to fear of mortality, limitations of space, increasing feeding costs, onset of unfavourable climatic conditions etc. For export of animals in exchange, export permit from the local authority and reserve bank clearance from a regional office has to be obtained before the deal can be completed. This procedure usually takes considerable time. Foreign parties often become discouraged due to reasons already mentioned and wish to withdraw from the deal. This not only brings disrepute to the country but also results in many disadvantages for the Indian zoos, which have to retain their animals for a longer period without any benefits of display, breeding etc. It is, therefore, necessary that this procedure for exchange of animals with foreign parties should be simplified.

3.4.3.3 It is recommended that in case of animals listed as special game, big game and small game, in Schedules II (Part I), III & IV of the Wild Life (Protection) Act, 1972, which are permitted to be hunted and trapped as well as exotic animals, should be allowed to be exported by zoos in barter deals without any restrictions. Recognised zoos may be permitted to correspond directly with foreign parties and to obtain a permit directly from the local import and export authority without following the lengthy procedure laid down at present. However, in case of endangered Indian species listed in Schedules I and II (Part II) of the Act, clearance from the Ministry of Agriculture may be obtained after the zoo has made preliminary enquiries and come to an agreement with the foreign parties. Here also, the procedure may be simplified in consultation with the Ministry of Foreign Trade.

3.4.3.4 In some cases it may not be possible for zoos to procure exotic animals on exchange basis only. It is likely that the Indian zoos may not have the animals required by foreign parties or that the parties do not wish to have any animals in exchange. In such cases, the release of foreign exchange for purchase of foreign animals should be considered favourably. The procedure may be streamlined with a view to avoid delays as suggested earlier.

4. MAINTENANCE OF HEALTH AND HYGIENE IN ZOOS

4.1 Maintenance of health of animals in a zoo is of primary importance. The zoo management should at all time pay a very high priority to this objective.

4.1.1 Most of the zoos are unable to provide the basic requirements for maintenance of proper health. In many cases shortage of space and funds for expan-

sion have resulted in their inability to provide adequate living space and even semi-natural conditions to the animals. Lack of adequate staff and powers are responsible for inadequate sanitation because the large accumulation of garbage resulting from excreta of animals, left over food as well as litter left behind by the increasing number of visitors and the drying and decaying vegetation, are not cleared as fast and as efficiently as required for maintenance of proper hygiene. There is inadequate use of disinfectants largely due to shortage of funds. There are limitations regarding supply of proper and varied diet as well as purchase and application of prophylactics and therapeutic drugs. Lack of suitable equipment and facilities for capture, transport, restraint and observation are also responsible for not providing immediate attention to the sick and wounded. The experience gained in this context in a zoo is rarely available to another zoo.

4.2 Hygiene and Sanitation.—The adage that “prevention is better than cure” holds good with all its force for the zoos. The basic requirements in this respect are

- (1) sufficient open space for the animals;
- (2) nutritious diet;
- (3) clean water;
- (4) proper shelter from extremes and vagaries of climate;
- (5) providing of environment close to natural habitat;
- (6) sufficient companionship to permit physiological processes of the animals and
- (7) general sanitation.

4.2.1. Space.—Every animal or group of animals should get sufficient space for their movement and exercise. The design of enclosures must be based on the needs of the animal.

4.2.2 Food.—Clean and nutritious food and regularity of supply ensure good physical conditions. It would be advisable for major zoos to maintain their own fodder and cattle farm and fish breeding at least to meet emergent needs. The food should be enriched with vitamins, mineral supplements etc. In case of outside supply of food, the food should be inspected by the veterinarian. At present zoo directors do not have adequate freedom to vary the feed and to experiment with the best one needed and suited to the requirements of the animals. This is due to the fact that in most cases the feed is purchased by calling for tenders once a year which once settled cannot be varied easily. Secondly, schedules of feed are fixed and varying them is difficult. It is necessary that zoo directors should have adequate powers to vary and purchase feed according to the requirements of each species.

4.2.2.1 A varied diet suited to the requirements of each species is very important from the health point of view. A bland and monotonous diet is not conducive to good health.

4.2.2.2 Hygienic storage and distribution of animal feed is very important. Storage arrangements should be such that all rodents and insect pests are kept out since they are the carriers of various diseases which can spread to the zoo animals.

4.2.2.3 In the distribution of feed also it is essential to ensure that clean and hygienic utensils are used. Personnel handling feed articles or cooking them must also be enjoined to observe strict personal hygiene at all times.

4.2.3 Water.—Clean water supply is necessary to help in preventing a number of communicable diseases. The moats and pools should be cleaned periodically and, as far as possible, drinking water should be drawn from protected water supply system. A few animals like sambar, bison, hippopotamus like to wallow and for this adequate provision should be made.

4.2.3.1 To minimise the rate of infection and to meet emergencies, the surroundings provided for various animals should be based on their ecological requirements. Keeping of enclosures, animal houses and cages clean of excreta etc. at all times would minimise the risk of infection. While cement concrete floor may be desirable from the point of preventing pests and parasites seeking shelter in the cages, it may not satisfy the psychological and physiological requirements of the animals nor meet the aesthetic requirements of the viewers. A compromise has to be worked out by suitable architectural designs of the enclosures to meet the different requirements, depending on the species of animal concerned. As for instance ungulates would require some rough surface to wear down their hoofs; deer and antelopes would require tree trunks etc. to rub against and sharpen their antlers etc. Same is true for certain carnivores which sharpen their claws and certain birds which require hard surface to prevent unwanted growth of beaks.

4.2.4 Shelter.—Open enclosures should have shelters for protection against extremes of sun, rain, hail, wind etc. Special heating and cooling arrangements may be needed at least in some cases where the species are unable to adjust themselves to the changed environment of the zoological garden.

4.2.5 Habitat.—The vegetation, soil, water, rock-work etc. must be so manipulated as to make the animals feel homely. Requirement of the individual species must be kept in view at the time of the designing and construction of the enclosures.

4.2.6 Companionship.—Animals should be displayed in pairs or groups according to the habits of the species in the wild and to provide companionship which may help in breeding. Where different species live gregariously in the wild, such mixed display would be necessary. This arrangement has the further advantage of increasing aesthetic value and keeping the inmates in good temper.

4.2.7 General sanitation.—There should be a permanent gang of sanitary staff with proper equipment and transport facilities like wheel barrows, van or lorry for quick and efficient removal of garbage. The use of disinfectants to clean the cages and utensils used

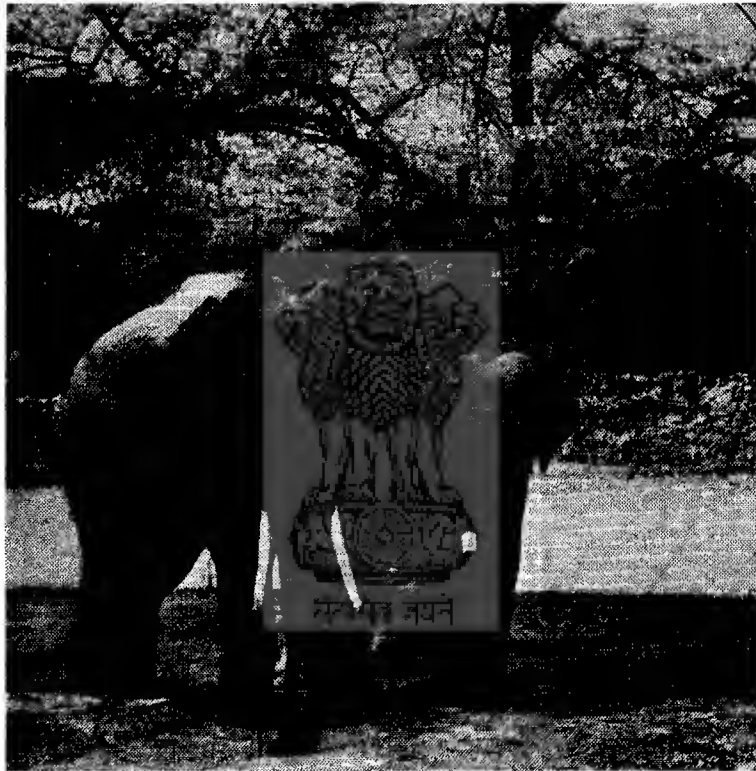


FIGURE 6—'Elephant walk'—A large open enclosure for the Indian elephants.

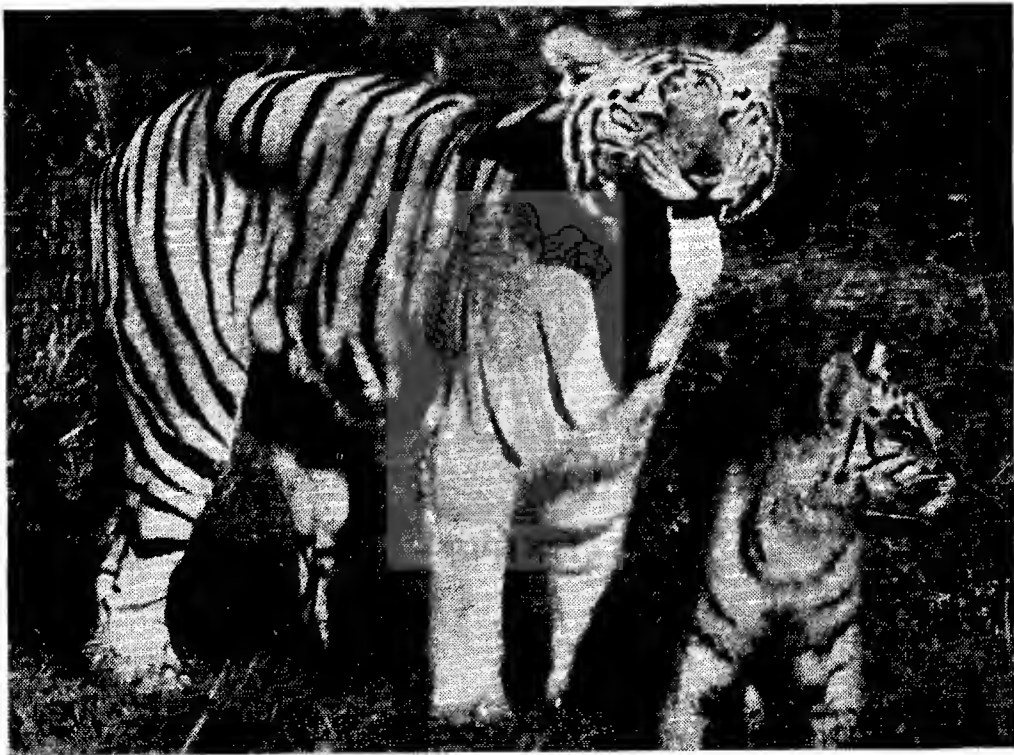


FIGURE 7—Tigress with a cub.

for preparation, mixing, transport and feeding of diet should be done regularly under the supervision of trained personnel. All efforts should also be made to reduce breeding and spreading of parasites and pests in the zoo.

4.3 Veterinary care.—Knowledge regarding diseases of wild animals and their treatment is scanty at present. This is mainly due to lack of specialised training facilities and career opportunities. In most zoos well equipped hospitals and other facilities for quarantine, isolation of species, clinical testing etc. are lacking. Important equipment like tranquilliser gun and X-Ray units etc. are not available. The following measures are recommended for adoption:—

4.3.1 Prevention of diseases.—Disinfection of cages, enclosures and utensils used for distribution of food, water etc. must be a routine operation. Periodical operations to prevent the spread of mosquitoes, flies, snails, rodents, crows etc. which can act as carriers of diseases must be carried out. Clinical laboratories should be attached to major zoo hospitals for periodical examination of blood, stool, urine etc., so that necessary periodical prophylactic measures like deworming, vaccination against communicable diseases etc. can be efficiently undertaken. In case of smaller zoos, the assistance of local veterinary or other research institutions must be taken at regular intervals to carry out examination about existence of parasites and pathogens for the above purpose.

4.3.2 Restraint.—Prophylaxis and treatment of sick animals becomes easier if methods of restraint are perfected for each kind. Isolation of an individual from a group requires skill. If the animals are habituated to come into the cells regularly either for rest or for food, it becomes easier to isolate sick animals. The zoos should, therefore, have feeding cells wherein the animals should be so encouraged and conditioned as to come at fixed hours. Physical force should not be normally used to capture or encage an animal as this frequently results in injury. Every zoo should also possess a stock of good transportation cages for quick transport. Decoying by means of attractive food is a safe and effective method to encage animals and should be used wherever possible. Restraint during

treatment can be achieved mechanically by use of squeeze cages. The zoos should possess squeeze cages for the purpose. Use of tranquillisers injected into the muscles or veins should be done only in cases of extreme need when prior knowledge of dosage, effects and antidote or reversible drugs is available. Tranquilliser drugs should not be used in respect of single and rare animals as well as females in advanced stages of pregnancy, without further knowledge and experience of their use under these circumstances.

4.3.3 Treatment.—‘A’ and ‘B’ category zoos should have a well equipped hospital where animals can be restrained by means of squeeze cage, kept under observation and treated as inpatients. A proper record of observations, medications and effects should be maintained in each case for future use. Apart from treating the sick animals in the hospital, the veterinarian should make a daily round of the zoo to observe the health of animals, feeding, general hygiene, stools etc., and in case of doubt, clinical examination of stool, urine, blood etc. should be promptly undertaken. In case of ‘C’ category zoos, there should be facilities of restraint and isolation of sick animals. A veterinary adviser should be engaged to make a weekly inspection of all animals and conduct periodical tests of faeces, blood etc.

4.3.4 Quarantine.—New animals coming into the zoo as gift or through purchase or through barter should be kept away from display animals in specially built quarantine areas for a minimum period of fifteen days before being shifted to display areas. Their food habits and behaviour should be observed during the period and in case of supply from private sources, prophylactic measures should be adopted to prevent outbreak of communicable diseases. A rigid quarantine may not be needed in respect of animals coming from good zoos under cover of suitable health certificates.

4.3.5 Isolation wards.—All zoos should have isolation wards away from quarantine, hospital and display areas, for keeping animals suspected to be having infectious or communicable diseases. The isolation wards should be utilised for observation and treatment of such animals till a clinical examination shows that they are free from infectious pathogens.

5. BREEDING AND REARING OF ANIMALS IN ZOOS

5.1 Breeding and successful rearing of zoo animals is of great interest from several points of view. One of the primary roles of modern zoos is conservation of rare species. Zoos can, by breeding, enable a particular species to survive even though that species may be extinct or nearing extinction in the wild. Examples may be quoted of the Pere David's deer which, though, extinct in its native habitat China, exists in fairly large groups in a number of parks and zoos in the United Kingdom and elsewhere in Europe. Similarly, instances may be mentioned of the Przewalski's horse, the wisent, Swinhoe's pheasant etc. Secondly, species which are threatened with extinction can find refuge in zoos where they can be multiplied rapidly for their survival or for eventual return to the wild. Thirdly, animals, though not endangered, can be bred for stocking of depleted areas. Finally, zoos can form a sort of reser-

voir for stocking other zoos, and thus restrict the rate of depletion from the native habitat of the species.

5.2 Certain Indian zoos have had a fairly good record of breeding endangered Indian species like the great Indian one-horned rhinoceros, Asiatic lion, tiger, panther, blackbuck, thamin, swamp deer, crocodile, binturong, white-winged wood-duck, Indian wolf, lion-tailed monkey etc.

5.2.1 A list of important species bred in Indian zoos during 1972-73 is given in Appendix V.

5.2.2 It is interesting to observe that during 1967, out of 177 animals listed as rare by the International Union for Conservation of Nature and Natural Resources, no less than 55 mammals, 17 birds, 8 reptiles, 1 amphibian and 1 fish were bred in the various zoos of the world.

5.2.3 Besides breeding some rare Indian species, there are records of breeding of some of the exotic endangered species in Indian zoos e.g. black rhinoceros and Swinhoe's pheasant.

5.2.4 The breeding and raising of endangered species in Indian zoos is generally a chance occurrence. Except in a few cases like the white-winged wood-duck, the Indian rhinoceros, Indian lion etc. sustained systematic efforts have not been possible in this direction on a country-wide basis. This may be said to be due to inhibiting factors like lack of

- (a) suitable animal stock;
- (b) adequate space in zoos;
- (c) technical support services;
- (d) adequate staff and funds and
- (e) opportunities for wide dissemination of accumulated knowledge and experience.

5.2.5 Some zoos have had no doubt a singular record in breeding different species of animals mainly by individual zeal. A sustained effort is, however, lacking due to factors enumerated above. As pointed out in the beginning of this report, zoos have an important role to play in conservation of endangered species of wildlife. They form the last refuge for survival of a species on the verge of extinction. It is, therefore, essential that zoos in India assume this increasing responsibility and make special efforts to breed at least one endangered species, if not more, of their choice in a sustained manner. It is also important that stud book and individual specimen data be maintained for all such animals in standardised proformae and notes exchanged between zoos on a regular basis. It must be remembered that wider the dissemination of the experience and knowledge gained on the subject, there would be the chances of attaining success in the breeding of any individual species.

5.2.6 For success in breeding animals in captivity, the following factors are generally recognised as important.

5.2.6.1 *Animal stocks.*—It is accepted by most zoo keepers that certain species do not present any great difficulty in breeding in captivity provided the requisite minimum needs are met. These include most of the deer and antelopes, some of the big cats, budgerigars and other parrots, finches, pigeons, pheasants etc. However, there are many more species that are considered difficult from this point of view. Recent trends show that even 'difficult' species are being increasingly bred in Indian zoos with advancements made in feeding, housing and health conditions. Instances may be cited of the rhinoceros, apes and some monkeys.

5.2.6.2 Due to difficulty in procurement, high cost and possibly a desire to exhibit "as many species as possible", zoos in India have tended to keep only a pair or so of most species. This is not conducive to breeding success besides other drawbacks. Instead of trying to keep as many species as possible in the limited space available, zoos should endeavour to keep only those species which can be maintained well according to modern concepts. The aim should be to

keep a group of animals rather than just pairs. This will not only allow social, psychological and physiological factors to have full play, but will also eliminate problems of incompatibility among pairs for breeding purposes and guard against the risk of having only one animal left in hand in case its partner dies. In keeping groups of animals, the various psychological and physiological requirements like ritualistic behaviour of the species, male-female ratio, total optimum population in the enclosure etc. must be borne in mind.

5.2.6.3 Knowledge and careful observation of animals on the part of the zoo staff is an important factor in successful breeding. Manipulation in the form of matching compatible pairs, changing animal partners, if found incompatible, bringing animals together at the right time, intervening judiciously in case of fights etc. are necessary in successful breeding programme in a zoo.

5.2.6.4 In case of incompatible pairs, exchanges between zoos should be tried. In case of single animals a system of "loaning the animals" or exchanging these between the zoos should be practised liberally without financial or commercial considerations.

5.2.6.5 *Feed.*—In animal breeding, the role of feed is of great importance. A bland and monotonous diet is not only unsuited to the continued good health of the animals but is also not conducive to their breeding. Food should be as varied as possible and should take into account (a) general requirements of individual species, (b) requirements of species preceding and during the breeding season/period and (c) requirements during the natal and post-natal periods. It is necessary that schedules and feeds should be varied in order to achieve breeding success. The usual diets are generally deficient in vitamins, minerals and trace elements. Excellent feed supplements are available in the market for increasing breeding potentials. Use of such supplements on wider scale should be encouraged. It must be stressed that a well balanced and varied diet suited to the requirements of each species is perhaps the best guarantee for breeding success.

5.2.6.6 Some zoos in India make use of some of the hormones. Indiscriminate use of hormones can cause harm. These have to be used very judiciously.

5.2.6.7 *Housing conditions.*—The environment in which the animals are kept in zoos has a great effect on their breeding. Though certain species like lions may breed in small cages of a circus, provision of adequate space is of primary importance for success in breeding. In general the following principles may be followed:—

- (a) Enclosures for animals and birds should be sufficiently large to give fullest opportunity of breeding rituals like chasing, dancing, play, exploration etc.
- (b) Enclosures should have provisions for hiding places and privacy if the animals are oriented to such requirements. This can be in the shape of dens, rocks, bushes, polls, holes in tree trunks etc.



FIGURE 8—A colony of lion-tailed monkeys.

- (c) Enclosures should meet the biological requirements of individual species e.g. polls for hippopotamus, or a soft ground for giraffe at the time of birth, withdrawal dens for large cats, right type of nests and nesting materials for birds like hornbill and so on.
- (d) Architecture of the enclosures should simulate closely the natural habitat of the rare species.
- (e) There should be provision for isolating the expectant mother into isolation cage or "breeding cage".

5.2.7 Management practices.—Breeding success is one of the yardsticks of good management practices in a zoo. Given all the conditions listed above, the difference between success or failure depends on the handling of the animals. "Care and commonsense" play an important role in this regard. Experienced personnel are vital for the success. Besides know-how zoo staff have to be ready to assist in the birth of difficult subjects. It is a common observation that most wild animals do not know how to behave at first litter. It is important to judge when one should intervene in such cases. Providing quiet and comfortable quarters and making the expectant animal get familiar with these in time is important. In certain cases removal of the progeny after a short interval of birth induces further breeding. An intimate knowledge of the behaviour of the individual animal is, however, necessary before any such step can be taken.

5.2.8 Artificial insemination.—At present there is neither any practice nor attempt at breeding zoo animals by artificial insemination. The difficulties involved in using this method for wild animals are manifold and not likely to be overcome easily. However, it has certain possibilities in the case of some of the important species which have proved refractory as far as breeding is concerned. Much research and sustained effort would be required if this method is to be used. This may be tried with wild boars to begin with as a lot of knowledge on the subject is available regarding domestic species of pigs.

5.3 Hybrids and cross-breeds.—The Committee took note of the efforts made by some of the zoos in experimenting with hybridisation and cross-breeding of different species. The Committee felt that such experiments at best form a source of publicity to the zoo, but that they hardly advance the primary objec-

tives of the zoos and as such, do not deserve to be encouraged.

5.4 Rearing of animals.—Post natal care of animals is equally, if not more, important than prenatal care of the mother. In case of mammals special care must be taken to see that the nursing mother is provided with enough nourishment to stimulate lactation, and to make it inclined towards raising the off-spring normally. As a rule it is necessary to provide undisturbed conditions. In case of certain large cats like tigers and panthers, the male is often kept away from the offspring. The best and most desirable method of rearing the young would be to allow the mother to take care of them, as they do in nature.

5.4.1 However, in the artificial conditions of the zoos, due to one factor or the other, the parents sometime abandon the baby after birth. Worse still is the case of the wild cats, wherein sometimes the mother may even kill and eat its own young. Sometimes the parent may get disabled due to injury or may die due to natural or other causes. In all such cases the zoo personnel will have to intervene and rear the youngones artificially. The methods adopted are firstly the use of foster parent e.g. goat or bitch in the case of large cats, wolves etc. and domestic hen in the case of pheasant etc., and secondly use is made of such artificial devices as incubators and brooders as in case of pheasant, rhea, giant tortoise etc. In other cases it is essential to know the exact dietary requirements of a new born baby as well as its feeding habits. At present significant success has been achieved in Indian zoos in hand rearing zoo babies such as the white tigers, normal tigers, panthers, gaur, rheas, pheasants and so on. However, no serious attempts have been made at milk analysis of various mammalian species nor their exact dietary performances have been worked out. The lack of a common forum and common publication medium has been responsible mainly for nonavailability of such information to other zoos.

5.4.2 There is great need to carry out further research into breeding and rearing of animals particularly the endangered ones. Stress should be laid on milk and diet analysis for various species. Successful rearing methods should be standardised for each endangered species in the first instance and given wide publicity by publishing the account in the Indian Zoo Bulletin. Opportunity should be provided to zoo personnel to meet at a common forum and discuss various methods. Recommendations for these proposals have been made elsewhere in this report.

6. DISPOSAL OF DEAD ANIMALS

6.1 Most zoos do not have a taxidermist for making proper use of the rare or valuable animals that die in the zoo. Salvaging of the skins, nails, horns, bones and other useful remnants of dead animals can be profitable as well as useful from the point of zoological research. Many zoos remove the skins of dead animals either with the help of their own staff or some local expertise and keep the salted skins for disposal by public auction; some get them preserved or mounted through a recognised taxidermist before disposal to either some museum or in public auction. Except in a few cases there is no liaison between the

zoos and museums or zoos and scientific institutions for proper utilisation of the dead animals.

6.2 In the zoos where veterinarians are appointed, post-mortem examination is invariably conducted in respect of all animals. Bulk of the dead animals are generally buried either in the graveyard provided within or outside the zoo premises. In certain zoos situated in congested cities, the carcasses are transported to a stipulated dumping ground from where the disposal contractors collect them for salvaging skins or bones.

6.3 The opportunity of use of the dead animals for collection of scientific information and material by the universities, research institutions and museums has not yet been availed of on a large scale. Excepting a few, the zoos are not in contact with such institutions for making dead animals available to them; nor most of the zoos have their own natural history museums where such material could be utilised.

6.4 The Committee is of the view that no dead animal should be disposed of without ascertaining the cause of its death. Before permitting salvaging of the pelt, the veterinarian must certify that doing so is not likely to cause spread of any communicable disease. Every zoo should maintain a list of institutions along with their field of interest so that such institutions are contacted immediately on death of an animal. The institution should make its own arrangement to remove such remains of the dead animal as are useful to them for scientific studies or display. When not required by such institution the pelt should be salvaged by the zoo itself with the help of a trained taxidermist in its employ, who should keep record of such measurements as are needed for curing or mounting the specimen. The skins should not be stored for too long in uncured or semi-cured condition. The cured skins and other salvaged material should be stored in a separate store and disposed of as early as possible.

6.5 The post-mortem room should be constructed close to the burial ground and arrangements should also be made for storing different animal products, before disposal or sale.

6.6 For disposal of the carcasses, the zoos should maintain incinerators, if possible. The incinerators should be situated close to the post-mortem room in a corner of the zoo. Where it is not possible to have an incinerator, the major zoos should maintain a burial ground, preferably away from the display area. Such burial ground should be enclosed by a suitable compound wall so that dogs, jackals etc. cannot enter it. The burial ground should be systematically used for

dead animals or their remains. For important animals of which the skeletons may be required in future, a board to indicate the place, date and kind of animal buried should be displayed. The depth of burial should also be noted. The board should remain in position for a minimum period of one year, unless the skeleton has been removed earlier.

6.7 In case of smaller zoos, i.e., category 'C' zoos, the services of the local veterinarian of the department of animal husbandry, should be obtained for getting the post-mortem examination done. The zoo should be in touch with the local scientific institutions to find out if any scientific material would be salvaged by them out of the dead animal. If there is no taxidermist attached to the zoo, an employee knowing the art of skinning or a local person conversant with the job should be utilised to salvage the pelt provided the opening of the animal is permitted by the veterinarian. The remains of the dead animal should be disposed by use of incinerator or buried. If no such disposal is possible, the zoo should arrange for transportation of the remains of the animal in a closed carriage to a public dumping ground for disposal. Storage facilities for keeping uncured skins till transport to a nearby taxidermist must be provided. Cured skins should be disposed of periodically either to museums or through public auction.

6.8 The animal which is known to have died of an infection of communicable disease should not be opened up for post-mortem. It should be disposed in the quickest possible time. The enclosure, the transport cage and the attendants should all be disinfected by use of disinfectants like phenyle, detol, permanganate of potash etc.

6.9 Record of post-mortem findings must be preserved. When parasites are detected, they should be properly preserved. In case of salvaging the skeletal remains against any indent from a scientific institution, the bones must be properly identified and serially numbered so that the skeleton can be reconstructed.

7. MAINTENANCE OF LAW AND ORDER IN ZOOS

7.1 Attendance figures in zoos show that they are perhaps the only institution in any city where the largest number of people of various educational, economic and sociological backgrounds and different age groups congregate. During 1972-73, the total attendance in 19 Indian zoos was over 20 million. The highest being in Bombay, totalling 7.5 million.

7.1.1 Such a large attendance of people of differing educational and sociological backgrounds is bound to include some undesirable elements as well. It may be argued that such elements are bound to be there in any other congregation of people and not necessarily in zoos alone. But it is evident that besides normal offences such as pickpocketing, plucking of flowers, teasing of women and children, zoos have peculiar problems compared to other institutions on account of the fact that they have the responsibility of displaying live animals including wild and dangerous ones to the public. In zoos 'both sides of the bars have to be kept under control and it is the side where the humans are that usually causes most trouble'.

7.2 Many offences are peculiar to zoos. These involve:

- (a) teasing and causing injury by throwing stones or with the aid of sticks, rods, handkerchiefs etc. or causing mental torture to the helpless dumb animals;
- (b) feeding with unsuitable food like sweets, fried and spicy substances which are likely to make the animal sick;
- (c) giving objects like old shoes, cigarette butts, key chains, nails, nuts and bolts, plastic bags, balloons etc. to animals or placing in their mouths such objects by swallowing which the animal dies due to obstruction in its system;
- (d) entering into certain animal enclosure to make an animal perform;
- (e) removing some animal for theft or for mere fun;

- (f) mutilation of animals by vagrants;
- (g) destruction and damage of animal enclosure labels and other structure and fittings;
- (h) destruction or damage of plants and other horticultural features; and
- (i) causing loud noise with crackers etc. and thus upsetting animals.

At present except in one or two States there are no laws against these specific offences in zoos. The laws under the Penal Code are neither adequate nor comprehensive enough for this purpose.

7.3 Most of the zoo officers-in-charge with whom the matter was discussed expressed inability to check the mounting wave of offences due to lack of adequate powers to deal with the offenders. Another factor is the lack of adequate security staff to deal with organised vandalism.

7.4 All zoo directors who were consulted opined that unless there is statutory backing, enforcement of any present day rule would be difficult. The necessity for a law or rule on the lines of the Bengal and Bombay Parks Acts and Rules with suitable modifications to meet requirements of specific zoos was strongly felt. This act, it was felt, should give to the

zoo directors powers of compounding offences and ordering fines. It was even suggested that there may be a police outpost in each zoo to meet with the mounting law and order problem.

7.5 In order to cope with the law and order problems peculiar to zoos, it is necessary that each State be requested to enact a special law for zoological parks of that State. It will also be useful if a police outpost is established in or near the zoo so that offences may be dealt with speedily.

7.6 Draft rules for this purpose are appended to the report at Appendix VI. Besides the above, increase in the number of watch and ward staff is strongly recommended so that problems are nipped in the bud.

7.7 **Staff discipline.**—Zoos are institutions wherein negligence or mischief by the staff is likely to result in serious threat to public life and property. It is necessary to maintain perfect discipline to avoid mishap. Strikes, go-slow and "work to rule" methods are disastrous to zoo-management. It is therefore, recommended that Zoo Services should be regarded as essential service and the officers are given maximum authority to deal with acts of indiscipline and insubordination firmly and without interference from any quarters.

8. POWERS OF ZOO DIRECTORS

8.1 A modern zoological park is a unique institution. It has extensive area, employs a large staff and above all it has the responsibility of looking after a variety of wild animals which are totally dependent for their very existence on the efficiency of managements. For these and reasons as already adduced, it is important to appreciate that in zoos the needs of animals have priority over all others. These needs may arise any time, in any situation and are often unforeseen and unexpected. Yet the management has always to be kept geared in anticipation to meet an emergency. Many a life can be saved and a catastrophe averted by timely action, which is the essence of success of a zoo. These needs may take any form or shape such as repairs of fences, moats, animal houses, procurement of feed and medicines, tools and equipment for the supporting services, vehicles etc.

8.2 Secondly, zoos attract the largest number of people compared to any other civic institution. Such large congregations of people present problems of their own, which must be solved in time, consistent with the requirements of the zoo. These vary from repairs and upkeep of lawns and gardens, roads, paths, shelters, water supply, water closets, direction boards and enclosure labels up to-date, publicity material to meet people's needs etc. The visitors often do not understand administrative delays since these are not apparent to them. They only see the results of delays and carry back impressions accordingly.

8.3 It is, therefore, necessary that the man-on-the-spot *i.e.* the director, who faces the public daily and answers their innumerable queries, should have the option to set right things and meet emergencies as and

when they arise without waiting for clearance from any other authority. For efficient management it is essential that adequate authority be vested in its director, who should be a full time incumbent. The present system of administrative and financial powers which is better suited to administrative jobs and has no relevance to a unique institution like a zoo has to be replaced by a system which would encourage managerial competency. The concept of administration should be replaced by one of management.

8.4 From the discussions that the Committee had with a number of zoo directors and officers-in-charge, it was evident that one of the major factors responsible for lack of progress has been the absence of adequate powers given to the officer-in-charge of a zoo. In some zoos there was a multi-tier system of administrative functions which resulted in delays in handling matters of urgent nature which had adverse effect on the condition of the zoo. The powers exercised by the officer-in-charge varied from almost nil to those of a "head of the department" in some cases.

8.5 Taking into account the above mentioned factors the Committee strongly recommends that zoo directors (according to the classification recommended vide Appendix II of this report) exercise powers as listed in Appendix VII. It will be evident that directors of 'A' category zoos have been recommended to exercise powers equivalent to those of a "head of the department" as far as zoo matters are concerned. Only those powers are listed therein which in the opinion of the Committee bear directly on zoo management. Other administrative and financial powers have not been dealt with since these may vary from State to

State. However, it is strongly felt that even in these respects zoo directors should be delegated equivalent powers since they can add to the more efficient management of a zoo.

8.5.1 The powers listed are the minimum required

keeping in view the present price levels. These have been arrived at after taking into account the existing practices, requirements of various categories of zoos and the responsibilities to be shouldered by their directors. They may be required to be reviewed after a period of three years.

9. COLLECTION AND DISSEMINATION OF DATA

9.1 **Collection of data.**—Most zoos maintain records of routine observations and related data in some form or the other. The common forms used are:

- (a) Animal index cards or history sheets, giving particulars of arrival, age, name, sex and periodical observations of abnormal behaviour, health and breeding;
- (b) Daily reports, giving observations of unusual occurrence in the zoo of all animals in respect of health and behaviour;
- (c) Stock register showing alterations in the stock of animals by purchase, gift, sale, barter, birth or death;
- (d) Death report showing the cause of death and post-mortem observations;
- (e) Case history sheet giving symptoms, diagnosis and treatment of animals reported sick;
- (f) Diet sheet indicating change of diet, if any, prescribed for one or a group of animals; and
- (g) Stud book for maintenance of genealogical information in respect of rare animals.

A few zoos also maintain records indicating the measures periodically undertaken in res-

9.2 **Dissemination of knowledge.**—A few zoos are publishing annual administration reports. Such reports should be issued by all zoos. It would be desirable to give as much scientific information also as possible in such reports. These reports should be sent to all zoos in the country. It may be advantageous to exchange them with a few important zoos abroad and other interested institutions for mutual benefit. Though there are a number of zoos in the country and a fund of information is available, there is utter lack of exchange of information with the result that the experiences gained are not available to all. Valuable information obtainable in a zoo rarely crosses the zoo boundary. Sporadic individual efforts have, however, been made to publish certain scientific observations in the existing journals like the *Cheetal*, *Indian Forester*, *Journal of Bombay Natural History Society*, the *Indian Veterinary Journal*, *International Zoo Yearbook* etc.

9.3 A good "Zoo Bulletin" is over due in the country. It should be issued from New Delhi as a quarterly with the financial aid of central agency for zoo development. The Bulletin should be divided into the following sections:—

- (a) *General section*—dealing with situation, extent, layout, landscape, architecture, display etc.;
- (b) *Conservation section*—dealing with breeding of endangered species, rearing and upkeep of less

seminars of this association should be arranged to encourage exchange of ideas. The conferences and seminars should be held in various zoos of the country so that the members get opportunities of visiting other zoos.

9.6 Exchange visits between zoos of various categories of staff are also recommended. The central financing agency should, sponsor and finance such visits by giving grants.

9.7 **Compilation of a comprehensive zoo manual.**—There is not much authentic literature published on

planning of zoos, designing of animal houses, moats, fences and walls, constructional and architectural details, maintenance, restraint and treatment of animals and other aspects of zoo management. A comprehensive manual which will serve as reference book is necessary for the guidance of designers of new zoos as well as for those who are responsible for maintenance and improvement of the existing zoos. It is recommended that compilation of such a manual should be taken up at the earliest. The work should be sponsored and financed by the central financing agency.

10. FINANCING AGENCY FOR ZOO

10.1 All the zoos receive budget grants from the controlling authority which is either the central or state government or an autonomous body like the municipal corporation or a trust. The collection from entry charges or other revenues like the sale of animals (dead or alive), lease of kiosks, restaurants, parking lots, collection of grass etc. are not available to zoos for expenditure except in a few cases, but go as revenue receipts. In Alipore Zoological Gardens, Calcutta, the salary of the senior administrative staff is borne by the Government of West Bengal and the expenditure on the maintenance of zoo is met from the revenue receipts or lumpsum grants. In all zoos, however, the expenditure on all accounts including salary of staff, capital works and maintenance, is much larger than the total income. Since the increase in expenditure budget has not been commensurate with the rise in living index during the years, most zoos have suffered either a stagnation or a decline in the rate of their growth. The expansion programme meant for development in case of young zoos has also been slow due to lack of grants and rise in the overall cost of development and management.

10.2 The budget grant for zoos varies from Rs. 8,000.00 to about Rs. 25,000.00 per annum. With ever increasing cost of maintenance, many zoos are unable to maintain the animals properly. Majority of the zoos have not been able to improve or expand for want of funds. As a rule, zoos receive low priority in the allotment of funds by the controlling authorities.

10.3 **Finances.**—In a developing country like India, it is not possible that the zoos which have social and educational objectives, can be converted into self-supporting commercial institutions. An increase in the rate of entry tickets is beset with the difficulty of defying the primary objective of educating the masses, as the worst affected will be the large percentage of weaker sections of the society. It is, therefore, necessary that the zoos should be heavily subsidised. The present system of different authorities controlling the zoos, presents considerable difficulties for planned development of zoos as there is no free exchange of knowledge and material or uniformity in standards.

10.4 **Financing agency.**—In view of the above practical difficulties, the only solution is that the Union government should create a central agency in the form of a "Zoo Grants Commission" and place annual grant at its disposal for systematic improvement of zoos in the country.

10.5 **Composition.**—The Zoo Grants Commission should be serviced by the Ministry of Agriculture. It should be an autonomous body consisting of:

1. Chairman (honorary or part-time);
2. a whole-time secretary in the rank of director;
3. inspector-general of forests as ex-officio member;
4. two directors of zoos; and
5. five other members to be drawn from the public and departments connected with zoos.

The secretary should be assisted by a personal assistant, one accountant, one technical officer, two technical assistants, two upper division clerks, four lower division clerks-cum-typists. The Zoo Grants Commission should meet at least twice a year and more often, if necessary, and should be authorised to appoint specialists committees as required for a proper discharge of its functions.

10.6 **Responsibilities.**—The Commission should assist the zoos in:

- (a) procurement of animals from abroad;
- (b) exchange of animals between Indian and foreign zoos;
- (c) procurement of medicines and equipment from abroad;
- (d) providing technical advice for preparation of plans for development of zoos;
- (e) co-ordinating the breeding of endangered species;
- (f) proper distribution of rare animals for breeding programmes;
- (g) allocation of funds for the following purposes:—
 - (i) projects for breeding of rare species;
 - (ii) research programmes aimed at improving management and connected basic research on zoo animals;
 - (iii) capital works connected with expansion programmes;
 - (iv) capital cost of procurement of costly animals, books, drugs and equipment;
 - (v) arranging for technical expertise;

- (vi) conducting seminars and symposia for exchange of knowledge;
- (vii) exchange visits of zoo personnel within the country and abroad for mutual understanding and knowledge;
- (viii) training programmes of zoo personnel in various aspects of zoo management and taxidermy;
- (ix) compensating for unforeseen calamities like flood, gale, epidemics etc.
- (x) financing the "Zoo News Bulletin" and
- (xi) any other special problems of zoos at any time.

10.7 Grants.—The Zoo Grants Commission should annually receive grants from the central government for—

- (a) maintenance of its staff and
- (b) grants-in-aid.

The Commission should also negotiate and receive funds from individual organisations from within the country and abroad. The funds of the Commission should be liable to be carried over to subsequent years. The central government grants to the Commission should not be less than one-fourth of the total expenditure budget of all the zoos together. At present, all the public zoos in India are spending approximately Rs. 6.00 million per annum. 25% of the existing level of expenditure comes to Rs. 1.5 million per annum.

10.8 Procedure for assistance.—The member zoos should apply to the Commission with plans, estimates and programme of works for each scheme requiring assistance. The schemes should be divided into:

- (i) long-term schemes requiring assistance for a period over one year and
- (ii) short-term schemes requiring funds for less than one year.

Applications for assistance during any financial year should reach the Commission before the middle of

June of the previous year. Items intended to be carried over from previous years should also be included in the proposals. Each proposal should contain an undertaking by the controlling authority that the staff and maintenance grants required for Commission aided, schemes would be provided in the future budgets of the zoo. Assistance shall not cover grants for maintenance works and salary of staff, except in the case of research projects covering a specific period of not more than three years and brief training programmes. The grants made shall be spent only for the purpose for which they are given and within the period prescribed. Extension of period for execution shall be given by the Commission without any increase in the gross financial commitment for each scheme.

10.9 Powers of the Commission.—The Commission shall have powers to:

- (a) scrutinise the schemes technically and alter, accept or reject the scheme submitted by the zoo;
- (b) fix up priorities in aided zoo development schemes;
- (c) lay down conditions for transfer of zoo animals procured under aided programmes;
- (d) inspect zoos to ensure proper utilisation of grants-in-aid;
- (e) arbitrate between zoos on disputes arising out of exchange programmes;
- (f) collect and collate data on the Indian zoos and
- (g) register and recognise zoos.

10.9.1 There appears to be a general tendency to relegate to the background of the breeding importance of rare animals as preference is given to their display value. It is, therefore, necessary to have a Survival Service Committee of the Zoo Grants Commission which would collect information about all endangered species and direct a co-ordinated breeding programme. The directives of the Committee shall be obligatory to the zoos in respect of transport, upkeep and sharing of the progeny. The survival service committee should get adequate financial support from the Zoo Grants Commission to fulfil its obligations.

PART III

1. POLICY OF ZOOS

1.1 A few zoos were started in the middle of the last century under the patronage of the rulers or by the municipal corporations mainly for the purpose of pleasure and pastime. The location and development of zoos do not appear to have been chosen or planned for maximum advantage to visitors and animals. There are no policies laid for the purpose of starting of zoos nor any standards or guide-lines prescribed for their maintenance and development. Zoos get started because of the enthusiasm of some individuals and institutions concerned. Most of the zoos are public institutions though a few small zoos still exist under private management. Starting and running of zoos without proper finances, planning, experience and trained personnel results in non-fulfilment of the objectives for which they are meant.

1.2 It is, therefore, necessary to fix up guidelines for starting of zoos and maintaining them. At present there is no scope in this country for starting zoos under private ownership. It is necessary to start and maintain zoos as public institutions to fulfil the various objectives. In the absence of organised zoological societies and clubs with substantial financial resources, the zoos have to be run by public undertakings financed by government, autonomous bodies or trusts. Considering the great utility of zoos, it is advisable to start good zoos in all centres of collection of people like large cities and tourist complexes. But due to limitations of resources like finances, space, extremes of climate, trained personnel and availability of exhibits both Indian and exotic, it is not advisable to start new zoos when the existing ones are unable to develop or want of funds, personnel, space, exhibits etc.

1.3 It is, therefore, recommended that each state should pool resources for development of one or two already existing zoos situated in places where maximum number of people derive benefit from them. The state capital and important tourist complexes ensure maximum visitation. Apart from such main zoos, the states rich in varied cross section of wildlife may open regional zoos to specialise in display and breeding of the regional fauna. The high altitude zoos, the aquaria, the arid climate zoos may be mentioned as examples in the context. Needs of local and limited interest can be fulfilled by opening deer parks, safari parks, pet corners, children's zoos etc. which have been classified as 'D' category zoos.

1.4 In starting a new zoo or developing an existing zoo, it is necessary to aim at achieving certain standards for their management. The following guidelines are recommended in this regard:—

1.4.1 A good zoo should be developed as a zoological park with a natural blend of animal enclosures,

parks, lawns, groves, moats, cascades, water-spread and varied topography.

1.4.2 The space available should be large enough to provide for all the above features and semi-natural enclosures for the various groups of animals to be displayed with adequate provision for allied services and expansion. Category 'A' zoos should not be less than 50 ha., Category 'B' should be at least 25 ha., and Category 'C' could be below 25 ha.

1.4.3 The zoo should aim at displaying all the local and regional fauna and as many important exotic animals as may be possible.

1.4.4 The administrative pattern given in Appendix III of the report should be followed.

1.4.5 The controlling authority should ensure adequate budget provision for phased expenditure on all the capital or development works envisaged for the purpose. There should be adequate guarantee of providing recurring or maintenance expenditure, modernisation and improvement. At the present price level, it is felt that the capital cost of category 'A' zoo would be about Rs. 10.00 millions and recurring expenses of about Rs. 1.5 millions per annum.

1.4.6 There should be provision for educational, research and veterinary services to fulfil the accepted objectives of modern zoos.

1.4.7 Amenities to the public in the form of restaurants, shelters, telephone, first aid, transport, drinking water, cloak room, guides etc. must be provided.

1.4.8 Adequate and sustained supply of various kinds of nutritious feed must be ensured.

1.4.9 Provision should be made for training of different categories of staff to ensure scientific management.

1.4.9.1 The zoo should be registered with the proposed Zoo Grants Commission and thereby ensure systematic development and exchange of knowledge and material with other zoos. Wherever feasible, it would be better to bring the management of all zoos in a state under one controlling authority.

1.5 The smaller zoos with no scope for development may either be abolished or amalgamated with other zoos of the state for improvement of standards.

2. WORKING HOURS, PUBLICITY AND PUBLIC RELATIONS

2.1 Closure and working hours.—Many zoos do not observe a weekly closure. The working hours in many zoos cover the whole day. This causes a strain on the animals as well as the administrative staff which do not get rest at all. Shifting of the animals requires a lot of time, patience and peace. This and special cleaning of enclosures are better carried out in the absence of visitors. It is, therefore, necessary that all the zoos should observe closure for one day in a week. The maximum working hours per day of a zoo should be eight hours.

2.2 Publicity.—The major zoos get sufficient publicity through the medium of press, radio, television etc. Some zoos have brought out colourful pamphlets and brochures for publicity. A few have put up boards and hoardings in important public places. Since the zoo is also meant to educate the public, some amount of publicity is necessary to attract them. Adequate publicity should be arranged through audio-visual means. There should be periodical propaganda about the important events in the zoo in the news papers, magazines, radio and television. Pamphlets and handouts should be given out periodically for mass circulation to publicise important happenings. Extension activities must be undertaken to invite groups of people from educational institutions and conduct them on guided tours of the zoo. The zoo officials should visit educational institutions, nature clubs and voluntary organisations to exhibit films and explain the aspects of zoo management for promotion of healthy public relations.

2.3 Public relations.—Many zoos provide some basic amenities to the visitors. Although the zoos are meant to educate people while they come to visit the zoo, provision of proper guidance to visitors is lacking in almost all the zoos. This lacuna should be filled up.

2.4 The basic amenities which may be provided to zoo visitors are

- (a) convenient public transport to the zoo-site: co-operation of the local transport agencies must be sought to provide bus or train facilities to and from the zoo from important traffic points like city centres, railway stations, important educational institutions, important tourist centres like museums, historical monuments, churches, temples, mosques etc. and all important residential localities;
- (b) taxi, tonga or rickshaw stands: a place for hire carriages to wait must be provided for, close to the zoo;
- (c) parking lots: parking places for private and public driven vehicles like buses, cars, scooters, cycles etc. and watch and ward to look after them at some nominal charges must be provided;
- (d) communication facilities: public telephones, public address system in case of missing children etc. a telegraph and post office close by are necessary and should be provided.
- (e) cloak room facilities for depositing luggage which the visitors cannot carry around with them during the zoo visit and facilities for depositing and return of lost property;
- (f) public conveniences at various places in the park with proper arrangements to keep them clean;
- (g) drinking water supply at various points;
- (h) guide books, maps, explanatory notes about the important animals and features of the zoo at nominal cost;
- (i) shelters, lawns and groves where the public can rest and escape from rain and sun;
- (j) guide maps for visitors to go round places of their choice on their own;
- (k) sign-boards and direction boards for guiding visitors at all junctions, turning and important points;
- (l) boards on enclosures to give the name, distribution and other important information on the animals displayed;
- (m) reading room facilities where wildlife publications can be made available to visitors;
- (n) auditorium where wildlife films can be screened and lectures delivered at periodical intervals with prior notice;
- (o) restaurants, kiosks and bars for refreshments;
- (p) souvenir shop for selling curios, picture post-cards etc. of wildlife motifs;
- (q) transport facilities like animal driven carriages, mini-bus, electric train, cabin lifts, chair-lifts etc. within the zoo in case of large zoos;
- (r) prams and push-carts on nominal hire charges to take children around;
- (s) children's corner with pets to fondle with;
- (t) information counter for supply of tourist and zoo information to visitors;
- (u) mini-museum to display the embryo, eggs, youngones, skeletal and other parts of economic importance, nests, ecto-and-endo-parasites and charts to show common diseases of wild animals and their symptoms;
- (v) suggestion and complaint boxes to invite new ideas and comments from the visitors;
- (w) boards at important tourist centres in the town to display timings, tariff facilities and holiday of the zoo;
- (x) picnic corners for small groups or parties;
- (y) guide lecturers who can take groups of visitors around and explain the habits, habitat, behaviour and other important features of zoo exhibits and
- (z) first-aid facilities to visitors.

2.5 The zoo guide-lecturers should be conversant with English and local language and should have basic knowledge in biology. They must be trained for a period of three months by the zoo-management regarding the information to be made available to visitors. Guide-lecturers should be freely available to educational groups visiting the zoo in quest of knowledge about display animals.

2.6 Major zoos should have a public relation officer. He should be a graduate in biology and trained in maintenance of healthy public relations. He should be responsible to find out and cater to the needs of visitors. He should supervise the work of the guide-lecturers. He should be responsible for all extension activities of the zoo including publicity among educational institutions.

3. EDUCATIONAL ACTIVITIES IN ZOOS

3.1 The increasing role of zoos in imparting education in Natural History to visitors has been recognised in many zoos in the United Kingdom, Europe, United States of America and Japan. An international zoo education officers' conference is held annually in Europe and U.S.A. In most of these zoos regular instructions in Natural History are imparted to groups of students etc. in 'zoo schools' as well as in front of the enclosures. Various methods like lectures, guided tours, encouragement of independent study by individuals are also adopted. In the U.S.A. there are educational centres in zoos where guides and teachers are also engaged on a voluntary basis.

3.2 Such educational programmes serve to:

- (i) impart instructions in Natural History which supplements in an interesting manner classroom lectures;
- (ii) arouse the interest of students in not only the animals displayed but also in their evolution, ecology and conservation;
- (iii) shift emphasis from the purely entertainment value of the animal viewed, which lowers its natural dignity in the eyes of the viewer, to an awareness of its functions in the scheme of nature.

The programmes include bringing out publications to further above objects.

3.3 In Indian zoos, no distinct educational facilities are provided at present. The above mentioned objectives are served to a limited extent in some zoos with the help of charts, boards, radio and television programmes.

3.4 It is, therefore, recommended that in Indian zoos:

- (a) Natural History education centres be set up;
- (b) zoos should be placed on the educational excursion curriculum of schools and colleges (teaching biology);
- (c) special publications oriented towards these objectives be issued;
- (d) special educational charts highlighting Natural History should be put up in the zoos;
- (e) audio-visual aids should be collected in the zoos to be made use of in various educational programmes in the zoo and in educational institutions;
- (f) zoos should employ special educational programme organisers who should collect necessary literature, films and other material and use these for promoting love and knowledge of animal and plant life in general.

4. MISCELLANEOUS MATTERS

4.1 **Transfers.**—In the existing zoo administration, there is no scope for transfer of personnel from one zoo to the other. The experience gained by any official cannot thus become available to another zoo. It was felt by some members that it would be in the interest of co-ordinated zoo development to work out an arrangement under which transfer of equivalent categories of officials of zoos registered under the Zoo Grants Commission can be arranged. Such transfers, it was hoped, may deter from certain officials developing vested interests in a particular zoo-management.

4.2 **Promotions and incentives.**—There are certain categories of zoo staff for whom there are no avenues of promotion. Meritorious persons who by their intelligence and hard work become well-versed in certain department, should get encouragement by way of incentives in the form of either promotion or higher grades of pay. If such promotional avenues are available in other zoos, these officials should have

scope to compete for such posts. Where the promotional chances are limited or altogether absent, a system of granting special selection grades or merit increments should be considered, so that really competent persons do not stagnate in their scales. The Director should be empowered to grant rewards for any outstanding work done by a member of the zoo.

4.3 **Punishments.**—Zoo is an institution wherein negligence of duty and improper behaviour of staff will cause great harm either to the mute inmates or the public. Commissions and omissions by staff cannot be ignored. Theft and adulteration of food and drinks lead to severe consequences. Lot of co-operation from the staff is needed at the time of shifting, treating of the sick and wounded and recapturing of escaped animals. It is, therefore, necessary that discipline of the highest order is maintained among the staff. The zoo directors should, therefore, have special powers to take punitive action against erring and negligent staff on the spot.

4.4 Entry fees.—The fee for entry into the zoo varies from no charge to sixty paise per adult. It is necessary to keep the entry fee within the means of the lowest class of society. But free and low fee entry is likely to encourage undesirable elements to get in and cause nuisance to inmates and the public. Certain zoos charge separate fee for showing some rare animals. This is not very desirable if the enclosure in which such animals are kept is a part of the zoo.

4.4.1 At the existing price index, it would be desirable to keep a maximum of Re. 1.00 per adult for

'A' and 'B' category zoos. The entry fee for children, students and educational parties should be concessional and not more than twenty five per cent of the maximum fee. The entry fee for 'C' and 'D' category zoos could be twenty five to fifty per cent of the fees in the 'A' category zoos. Whereas still and amateur movie photography could be allowed free, for professional or commercial photography separate fees should be charged. Parking, transport service etc. can also be charged separately.



No. J. 11022/3/72-FRY/WLF
GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE
(Department of Agriculture)

New Delhi, the 19th June, 1973.

To

1. The Secretaries,
Forest Department,
All States/Union Territories
2. Directors/Superintendents,
All Zoos.

SUBJECT:—*Constitution of Expert Committee on Zoos as recommended by the Indian Board for wild Life.*

SIR,

I am directed to say that the Indian Board for Wild Life at its IX Session held on 18th November, 1972 at New Delhi, recommended that an Expert Committee should be set up under the Indian Board for Wild Life to make a detailed study of setting up and maintenance of zoos in the country. This was also discussed in the Executive Committee of the Indian Board for Wild Life. The Committee also recommended that the Expert Committee should be constituted with immediate effect.

2. The recommendation of the Board and its Executive Committee for setting up an Expert Committee under the Board was considered by the Government. It has now been decided that the Expert Committee should be constituted with effect from 1st June, 1973 up to 31st August, 1973.

3. The composition and the terms of reference of the Committee shall be as follows:—

(i) *Composition*

1. Dr. A. P. Kapoor,
Director,
Zoological Survey of India,
34, Chittaranjan Avenue,
Calcutta.
2. Shri N. D. Bachkhetti,
Conservator of Forests,
Southern Circle,
Allahabad (Uttar Pradesh).
3. Shri Pushp Kumar,
Curator,
Nehru Zoological Park,
Hyderabad.
4. Shri K. Parameswaran Pillai,
Director of Zoos & Museums,
Kerala State,
Trivandrum.
5. Shri N. S. Adkoli,
Director,
Delhi Zoological Park,
New Delhi.



Chairman

Member

Member

Member

Member-Secretary.

(ii) *Terms of references:—*

1. To study the various zoos in the country and formulate norms on the basis of which zoos can be classified. The main aspects to be considered in this behalf would be the overall area of the zoo; the space for animals in individual enclosures and facilities available for feeding etc. of the animals.

2. To suggest administrative pattern for various categories of zoos.
3. To suggest methods of capture, transport and handling of animals.
4. To suggest the agency/agencies through which animals could be procured.
5. To formulate minimum standards for the maintenance of health and hygiene in the zoos.
6. To examine matters relating to:
 - (i) breeding and rearing of animals;
 - (ii) exchange of animals within the country and abroad.
7. To suggest statutory provisions for the maintenance of law and order in the zoos.

8. To suggest powers that zoo directors should exercise.
9. To suggest means of disposal of dead animals.
10. To suggest means of collection and dissemination of specific data.
11. To examine whether a financing agency for zoos is required and, if so, what this agency should be.

4. The Committee is expected to complete its report by the 1st week of September, 1973 so that it is ready in time for consideration at the next meeting of the Indian Board for Wild Life proposed to be held in October, 1973.

5. All the secretarial assistance will be provided by the Ministry of Agriculture, Department of Agriculture, New Delhi.

6. State/Union Territory Governments and zoo directors/superintendent/curators are being requested to extend all facilities and co-operation to the Committee.

Yours faithfully,

RANJIT SINGH

Deputy Secretary to the Govt. of India.

Copy forwarded for information to:

1. All members of the Expert Committee.
2. All members of the I.B.W.L.
3. The President, Forest Research Institute & Colleges, Dehra Dun.

RANJIT SINGH

Deputy Secretary to the Govt. of India.

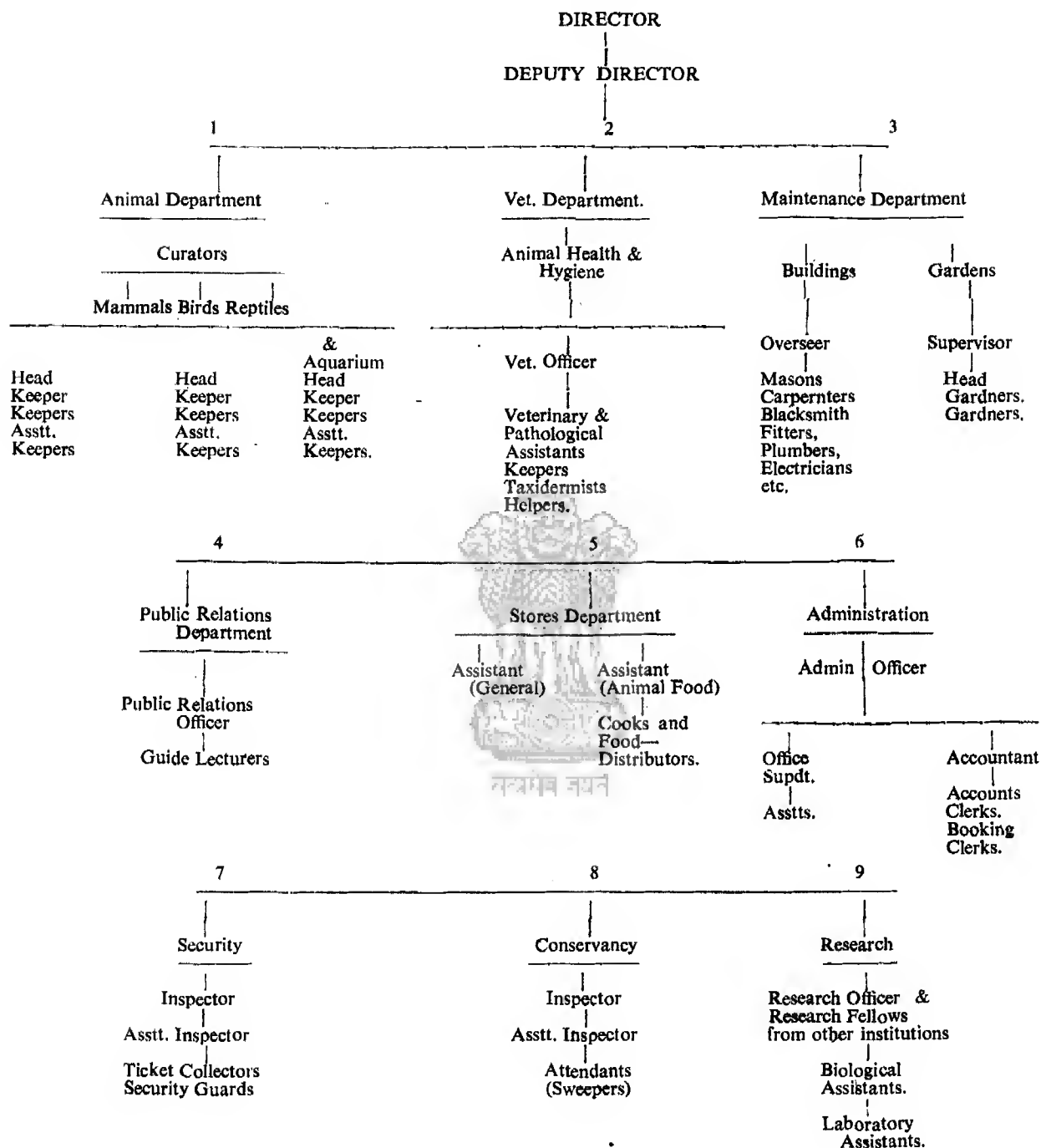


List of Zoos and their Classification

| S. No. | Name of the zoo | Place | Administration | Classification | Remarks |
|-------------------------|---|---------------|-----------------------|----------------|---------|
| ANDAMAN | | | | | |
| 1 | Andaman Zoological Park. | Port Blair | State Government | D | |
| ANDHRA PRADESH | | | | | |
| 2 | Indira Gandhi Zoological Park, (Asstt. Conservator of Forests). | Visakhapatnam | State Government | .. | New |
| 3 | Nehru Zoological Park (Curator) | Hyderabad | Do. | A | |
| ASSAM | | | | | |
| 4 | Assam State Zoo & Botanical Garden, Kamrup Division, (Divisional Forest Officer). | Gauhati | Do. | B | |
| DELHI | | | | | |
| 5 | Delhi Zoological Park (Director). | New Delhi | Central Government | A | |
| 6 | Oyester's Pet Centre and Zoological Garden, Daryaganj. | Delhi | Private | D | |
| GUJARAT | | | | | |
| 7 | Jamnagar Zoo | Jamnagar | Private | D | |
| 8 | Maharaja Fateh Singh Zoo, Laxmi Villas Palace, (Honorary Curator) | Baroda | Private | D | |
| 9 | Municipal Hill Garden Zoo, Kankaria (Suprintendent) | Ahmedabad | Municipal Corporation | A | |
| 10 | Nehru Children's Zoo and Natural History Section, Pratikriti Bhawan, (Curator). | Amreli | Municipality | D | |
| 11 | Sakkar Bagh Zoo, (Zoo Officer) | Junagadh | State Government | C | |
| 12 | Sri Sayajibag Zoo (Honorary Curator) | Baroda | Municipal Corporation | C | |
| HARYANA | | | | | |
| 13 | Deer Park | Hissar | State Government | D | |
| 14 | Mini Zoo (Divisional Forest Officer) | Pinjore | Do. | D | |
| HIMACHAL PRADESH | | | | | |
| 15 | Mini Zoo (Wild Life Warden) | Renuka | State Government | D | |
| 16 | National Himalayan Zoological Park (Wild Life Warden) | Simla | Do. | C | |
| KERALA | | | | | |
| 17 | State Museum & Zoo (Superintendent) | Trichur | State Government | C | |
| 18 | Trivandrum Zoological Garden, (Director) | Trivandrum | Do. | A | |
| MADHYA PRADESH | | | | | |
| 19 | Maitri Bagh Zoo, Bhilai Nagar (Horticultural Officer) | Bhilai | Bhilai Steel Plant | C | |
| 20 | Municipal Corporation Zoo Gandhi Park Lashkar (Superintendent). | Gwalior | Municipal Corporation | C | |
| 21 | Mini Zoo Kamla Nehru Park | Indore | Do. | .. | New |

| S. No. | Name of the Zoo | Place | Administration | Classification | Remarks |
|---------------|--|-----------------------|--|----------------|------------------------|
| MAHARASHTRA | | | | | |
| 22 | Borivili Zoological Park. (Divisional Forest Officer) | Borivili Bombay | State Government | D | Part of National Park. |
| 23 | Kolhapur Zoo | Kolhapur | Private | D | |
| 24 | Maharajbagh Zoological Garden (Superintendent) | Nagpur | Municipal Corporation | D | |
| 25 | Peshwae Park Zoological Garden, (Superintendent) | Poona | Do. | C | |
| 26 | Veermata Jijabai Bhosle Udyan, Byculla. (Superintendent of Gardens). | Bombay | Municipal Corporation of Greater Bombay. | B | |
| MYSORE | | | | | |
| 27 | Sri Chamarajendra Zoological Gardens, (Curator). | Mysore | State Government | A | |
| NAGALAND | | | | | |
| 28 | Zoological Park | Kohima | State Government | .. | New |
| ORISSA | | | | | |
| 29 | Nandankanan Biological Park (Wild Life Preservation Officer) | Nandankanan (Cuttack) | Do. | B | |
| PUNJAB | | | | | |
| 30 | Mini Zoo (Inspector of Wild Life) | Patiala | State Government | D | |
| RAJASTHAN | | | | | |
| 31 | Bikaner Zoological Garden (Supervisor) | Bikaner | State Government | D | |
| 32 | Zoological Garden of Jaipur (Supervisor) | Jaipur | State Government | C | |
| 33 | Jodhpur Zoological Garden (Supervisor) | Jodhpur | Do. | C | |
| 34 | Kota Zoological Garden, (Supervisor) | Kota | Do. | D | |
| 35 | Pilani Zoo | Pilani | Charity Trust | D | |
| 36 | Udaipur Zoological Garden (Supervisor) | Udaipur | State Government | D | |
| TAMIL NADU | | | | | |
| 37 | Children's Park, Guindy | Madras | Municipal Corporation | D | |
| 38 | Snake Park, Guindy | Madras | Private | D | |
| 39 | Zoological Garden (Superintendent) | Madras | Municipal Corporation | C | |
| UTTAR PRADESH | | | | | |
| 40 | Kanpur Zoological Park. (Dy. Director) | Kanpur | State Government | .. | New |
| 41 | Prince of Wales Zoological Trust (Director) | Luckow | Do. | B | |
| 42 | Deer Park, Sarnath. (Asstt. Conservator of Forests) | Varanasi | Do. | D | |
| 43 | Zoo-Fauna Trading Emporium, 509/18, Old Hyderabad | Lucknow | Private | D | |
| WEST BENGAL | | | | | |
| 44 | Alipore Zoological Garden (Director) | Calcuta | State Government | A | |
| 45 | Burdwan Zoological Garden | Burdwan | Private | D | |
| 46 | Himalayan Zoological Garden (Superintendent) | Darjeeling | State Government | C | |
| 47 | Mullick's Zoo | Calcutta | Private | D | |

Organisational set up of Category 'A' Zoos



Endangered Indian Animals In Zoos

| Common name (a) | Scientific name (b) | Sex and No. present (c) | No. bred during the year (d) |
|--|---------------------------------------|-------------------------------|------------------------------------|
| ORDER : PRIMATES | | | |
| Golden langur | Presbytis geei (Khajuria) | | |
| Hoolock | Hylobates hoolock (Harlan) | | |
| Lion-tailed macaque | Macaca silenus (Linnaeus) | | |
| Nilgiri langur | Presbytis johni (Fischer) | | |
| Slender loris | Loris tardigadus (Linnaeus) | | |
| Slow loris | Nycticebus coucang (Boddaert) | | |
| ORDER : CARNIVORA | | | |
| Binturong | Arctictis binturong (Raffles) | | |
| Caracal | Felis caracal (Schreber) | | |
| Clouded leopard | Neofelis nebulosa (Griffith) | | |
| Fishing cat | Felis viverrina (Bennett) | | |
| Golden cat | Felis temminckii (Vigors & Horsfield) | | |
| Leopard | Panthera pardus (Linnaeus) | | |
| Leopard cat | Felis bengalensis (Kerr) | | |
| Lion | Panthera leo (Linnaeus) | | |
| Lynx | Felis lynx (Linnaeus) | | |
| Marbled cat | Felis marmorata (Martin) | | |
| Pallas's cat | Felis manul (Pallas) | | |
| Red Panda | Ailurus fulgens (F. Cuvier) | | |
| Snow leopard | Panthera uncia (Schreber) | | |
| Spotted linsang | Prionodon pardicolor (Hodgson) | | |
| Tiger | Panthera tigris (Linnaeus) | | |
| Wolf | Canis lupus (Linnaeus) | | |
| ORDER : LAGOMORPHA | | | |
| Hind hare | Caprolagus hispidus (Pearson) | | |
| ORDER : PERISSODACTYLA | | | |
| Asiatic wild ass | Equus hemionus (Pallas) | | |
| Great Indian one-horned rhinoceros | Rhinoceros unicornis (Linnaeus) | | |
| ORDER : ARTIODACTYLA | | | |
| Black buck | Antelope cervicapra (Linnaeus) | | |
| Brow-antlered deer | Cervus eldi (McClelland) | | |
| Kashmir stag | Cervus elaphus hangul (Wagner) | | |
| Markhor | Capra falconeri (Wagner) | | |
| Musk deer | Moschus moschiferus (Linnaeus) | | |
| Nayan | Ovis ammon hodgsoni (Blyth) | | |

| (a) | (b) | (c) | (d) |
|---------------------------|-----------|-----|--|
| Pygmy hog | • • • • • | • | <i>Sus salvanigs</i> (Hodgson) |
| Swamp deer | • • • • • | • | <i>Cervus duvauceli</i> (Cuvier) |
| Takin | • • • • • | • | <i>Budorcas taxicolor</i> (Hodgson) |
| Tibetan gazelle | • • • • • | • | <i>Procapra picticaudata</i> (Hodgson) |
| Urial | • • • • • | • | <i>Ovis orientalis</i> (Gmelin) |
| Wild buffalo | • • • • • | • | <i>Bubalus bubalis</i> (Linnaeus) |
| ORDER: PHOLIDOTA | | | |
| Indian pangolin | • • • • • | • | <i>Manis crassicaudata</i> (Gray) |
| ORDER: CROCODILIA | | | |
| Mugger or Marsh crocodile | • • • • • | • | <i>Crocodilus palustris</i> |
| Estuarine crocodile | • • • • • | • | <i>Crocodilus porosus</i> |
| Gharial | • • • • • | • | <i>Gavialis gangeticus</i> |



List of Important Animals successfully bred in different Zoos in India

| ORDER | FAMILY | SPECIES |
|----------------|-----------------|--|
| MAMMALS | | |
| Marsupialia | Macropodidae | 1. Red kangaroo 2. Grey kangaroo 3. Bennett's wallaby |
| Primates | Lorisidae | 4. Slow loris 5. Slender loris |
| | Cebidae | 6. White fronted capuchin monkey 7. Squirrel monkey 8. Spider monkey 9. White-eared marmoset. |
| | Cercopithecidae | 10. Lion-tailed monkey 11. Sooty mangabey 12. Hamadryas baboon 13. Mandrill 14. Yellow baboon 15. Java monkey 16. Nilgiri langur |
| | Pongidae | 17. Chimpanzee |
| Rodentia | Sciuridae | 18. Albino five-striped palm squirrel. 19. Malayan giant squirrel |
| | Hystricidae | 20. Indian porcupine |
| | Dasyproctidae | 21. Golden agouti |
| Carnivora | Mustelidae | 22. Smooth Indian otter. |
| | Ursidae | 23. Sloth bear 24. Himalayan bear 25. Brown bear |
| | Procyonidae | 26. Lesser panda 27. Kinkajous. |
| | Viverridae | 28. Binturong |
| | Felidae | 29. Asiatic lion 30. Tiger 31. White tiger 32. Ussuri tiger 33. Leopard 34. Black panther 35. Golden cat 36. Caracal 37. Clouded leopard 38. Jaguar 39. Puma |
| Proboscidea | Elephantidae | 40. Indian elephant |
| Perissodactyla | Equidae | 41. Zebra 42. Indian wild ass |
| | Tapiridae | 43. Tapir |
| | Rhinocerotidae | 44. Black rhinoceros 45. Great Indian one-horned rhinoceros |
| Artiodactyla | Suidae | 46. Wart hog |
| | Hippopotamidae | 47. Hippopotamus |
| | Camelidae | 48. Guanaco |
| | Cervidae | 49. Albino spotted deer 50. Sika deer 51. Fallow deer 52. Musk deer 53. Thamin deer |
| | Giraffidae | 54. Masai giraffe 55. Reticulated giraffe. |
| | Bovidae | 56. Black buck 57. Black buck (white) 58. Four-horned antelope 59. Chinkara 60. Bison |

| ORDER | FAMILY | SPECIES |
|------------------|--|---|
| | | 61. Gaur 62. Gnu 63. Eland 64. Nilgiri tahr 65. Thomson's gazelle 66. Goral 67. Beisa oryx 68. Impala |
| AVES | | |
| Struthioniformes | Rheidae | 1. Rhea |
| Ciconiformes | Threskiornithidae Pelecanidae Ardeidae | 2. White ibis 3. Flamingo 4. Night heron |
| Anseriformes | Anatidae | 5. Black swan 6. Mute swan 7. White-winged wood duck 8. Lesser whistling teal |
| Galliformes | Phasianidae | 9. Silver pheasant 10. Golden pheasant 11. Green pheasant 12. Swinhoe's pheasant 13. Kalij pheasant 14. Cheer pheasant 15. Monal pheasant 16. Chukor 17. White peafowl 18. Grey jungle fowl. |
| Charadriiformes | Recurvirostridae | 19. Black winged stilt |
| Columbiformes | Columbidae | 20. Imperial green pigeon 21. Grey fronted green pigeon |
| Psittaciformes | Psittacidae | 22. Senegal parrot 23. Red and green macaw 24. Blue and yellow macaw 25. Blossom headed parakeet 26. Rose ringed parakeet 27. Sulphur crested cockatoo 28. Jandya conure 29. Red bellied conure 30. Brown eared conure 31. Bare-eyed cockatoo. |



Draft Rules for Prevention of Vandalism in Zoological Parks

Rules for securing the protection of— from injury and misuse, regulating the manner in which they may be used by the public, and providing for the proper behaviour of persons resorting thereto:

I. In these rules :

- (i) zoological park shall mean and include all gardens, open spaces, animal enclosures or cages and other structures therein;
- (ii) director shall mean the head of the park for the time being.
- (iii) park or zoo official shall mean any official appointed in any office or capacity in the zoological park.

II. Zoological park shall be open to the public during fixed timings to be displayed on a notice board placed at the entrance of the zoological park. It shall remain closed on any day or days in the week as announced by the director from time to time.

III. The director shall have power to close the zoological park or any part thereof and shall also have power to restrict the use of the zoological park or any part thereof for any purpose or purposes so as to exclude any person or any class of persons, provided that previous notice of such closing, restriction or exclusion shall be displayed periodically in English and any vernacular language at the entrance of the park or part thereof.

IV. The director may on special occasion reserve part of the park for any purpose.

V. The acts and things specified in the following rules are hereby prohibited and declared to be offences under these rules.—

1. Removing, damaging or injuring any fountain, pool, statue, monument, bust, post, chain, railing, fence, seat, barrier, gate, lamp, label, notice board or plate, animal house or cage, building, shed, urinal or water closet, or defacing or disfiguring the same by pasting thereon or affixing thereon in any way, any bill, placard or notice or by cutting or writing, stamping, printing, drawing or marking any matter thereon.

2. Without permission removing, plucking, damaging or injuring any timber, tree, plant, shrub, leaf, fruit, flower or grass.

3. Without permission taking, digging, cutting, damaging or removing any gravel, sand, sod, earth, clay, turf, mould, soil or any other substance without the right to do so.

4. Without permission going or attempting to go into any plantation or garden, lawn, flowerbed or any permanent or temporary enclosure or cage or any building which is marked private or reserved permanently or temporarily for any purpose.

5. Committing any encroachment in or making any enclosure or opening or attempting to open any cage or enclosure door or other devices.

6. Without written permission erecting or placing any post, rail, fence, pole, peg, spike, tent, booth, screen, stand, swing or other building erection or obstruction of any kind whatsoever.

7. Making or forming any new road or path.

8. Entering or leaving the Park except through the proper gate provided for the purpose.

9. Entering or attempting to enter the park or any part thereof reserved or a path or area closed for entry without having first obtained permission and or paid any fee charged for admission.

10. Taking or attempting to take into or out of the park any bird or any animal without permission.

11. (a) Removing from the park or its cage or enclosure any bird or animal or any part of the body of bird or animal without permission.

(b) Teasing or hunting or hitting or threatening or feeding any animal or bird without permission or throwing any lighted cigarette, matchstick, or any other article into or near a cage or enclosure.

12. Turning out to graze or feeding any animal or allowing to stray or leave any animal in the zoological park.

13. Riding or driving any animal in the zoological park, without permission.

14. Without permission of the director, using any part of the park except area thereof reserved by the director in this behalf for a picnic or pleasure party or for any such purpose using any part of the park not specified in any such permission or as pointed out by any park or zoo official.

15. Without the written permission of the director, lighting any fire, cooking any food or burning papers or rubbish or any other matter in the park.

16. Without permission, drawing, driving or propelling any vehicle other than and excepting perambulators for use by children and invalids in the park and driving any vehicle in excess of speed limits prescribed or in a rash or negligent manner, or parking any vehicle in a manner likely to obstruct traffic or parking in area where it is prohibited, except by permission.

17. Using any part of the park for shaking or beating any carpet, mat or any other article or as a drying or bleaching ground by placing clothes or any other article or thing on any of the trees or bushes or on the turf, grass or ground or any fence or railing or putting up any pole or line other support for clothes or other article, or for shaking, brushing or beating any carpet, mat or other article or thing.

18. Without permission bathing or washing persons or animals in, or washing clothes, or other articles or things in, or allowing any animal to enter into or doing any act likely in the opinion of the Director to cause the pollution of water in any stand-pipe fountain, basin or pond, pool or moat, in the park.

19. Committing any nuisance in the park or against any tree, shrub, wall, railing, fence, seat or other thing or under any arch or in any pool, moat, pond, lake or stream.

20. Going or attempting to go into any watercloset, urinal or other place of convenience provided for the opposite sex or infringing any regulations of the zoological park set up therein controlling the use thereof.

21. Lying upon or occupying any seat in or lying about in the park in a verminous or offensively filthy condition.

22. Teasing, feeding or touching, or in any way interfering with any bird or animal confined in any aviary, cage or enclosure in the zoological park or approaching within a yard of any cage, aviary or enclosure or the moat fencing or railing surrounding the same.

23. In the park, without permission catching and trapping of any animals, or laying or placing any net or trap for the trapping of birds or animals, taking bird's eggs or nests, or shooting or attempting to shoot with any weapon any bird or animal or chasing or attempting to chase any bird or animal, or throwing any stone or stick or missile with or without intent to injury or catch any bird, animal, game fish, fowl or reptile.

24. In the park begging or soliciting alms or without the written permission of the director, selling, letting on hire, trading or carrying any merchandise, food, fruit, sweetmeats or other eatables, aerated water or intoxicating drink or any article whatsoever intended for food or drink or distributing any bill, notice or propaganda material or placing any chair or seat for hire.

25. Carrying on of any trade within the park without permission of the director.

26. Firing any gun, pistol or other fire-arm, discharging any fire work, catapult or sling or throwing any stone or stick or any missile or using any syringe, squirt or doing anything which may anger or cause mental torture or any damage or hurt to the animals or the public or be deemed a nuisance, obstruction or annoyance.

27. Playing or making preparation to play at cricket, football, golf, quoits, lawn tennis or any other game or athletic sports or dancing or giving a musical performance or other entertainment or flying kites, or infringing regulation of the zoological park displaying in such places controlling the use thereof, without the consent of the director.

28. Interfering with, obstructing or annoying any person or persons, who with the written permission of the director or in pursuance of any of these rules are engaged in playing or have made any preparation to play any lawful game or are otherwise lawfully using the park.

29. Retaining and not forthwith handing over to the director or any person authorised to receive any unclaimed property found in the park.

30. Entering or being in the park in a state of intoxication.

31. In the park brawling, fighting or quarrelling, cursing, swearing or using indecent or improper languages or holding or taking part in any fighting, boxing or wrestling match being intoxicated, gambling playing at any game of chance, betting with cards or dice, begging, telling fortunes, selling or distributing any indecent or obscene print of book, lying on any of the seats, or lying, sleeping, sitting or resting in an indecent posture or being disorderly or wilfully or designedly doing any act which outrages public decency.

32. In the park delivering, uttering or reading any public speech, lecture, prayer, scripture or address of any kind or description whatever or singing any sacred or secular song or entering into public discussion, maintaining the right to deliver, utter or read any public speech, lecture, prayer, scripture, sermon or address or holding or causing or taking part in any public assemblage or soliciting or gathering money without the written permission of the director and except in strict conformity with the terms of any such permission.

33. Refusing to leave the park after the time of closing if requested to do so by the park officials so authorised or wilfully remaining therein after closing time or climbing on or over the gates, fences or railing or camping out in the park.

34. Interfering with, assaulting, resisting or aiding or inciting any person to interfere with, assault or resist the park officials or other person in the execution of his duty of the lawful exercise of any authority under these rules or otherwise or removing or attempting to remove any zoo property.

35. Throwing any kind of litter in the park, except in dustbins provided for the purpose.

36. Spitting in the park.

37. Throwing lighted matchsticks, kindling fire etc, so as to set fire to the dry grass.

38. Without permission or payment of prescribed fee entering into any boat, launch or dinghy, train or other vehicle etc, of the zoological park, and behaving in a way likely to endanger the safety of the vehicle and occupants or contravening in any way the rules framed for the particular purpose by the park authorities.

39. Fishing or angling in any pond, stream or lake in the park without permission.

40. Without permission or payment of prescribed fees riding any elephant, camel or pony or any other animal or in such a way as to endanger the safety of other riders or passerby, or contravening in any way the rules framed for the purpose by the park authorities.

41. Without permission or payment of prescribed fees entering into the swimming pool or in any way contravening the rules framed for the purpose.

VI. (a) Any person committing any breach of these rules shall be liable to a penalty not exceeding Rs. 50.00 and for every continuing offence to a fine not exceeding Rs. 20.00 for each day on which such offence shall continue after conviction for the first offence or after receipt of notice from the director to discontinue the offence.

(b) The director shall have the power to impose the said fine for each offence as also to recover such amounts as he deems fit to value of any damage caused or assessed by the director. On payment of such cost or compensation all further proceedings in the matter will be ceased.

VII. It shall be lawful for the director, or any park official incharge to exclude or remove from the park any person committing any breach of the above rules and all hawkers, beggars, rogues and vagabonds, and if any such person after being ordered or warned by any park official to go therefrom, shall neglect to go therefrom, or having left the place after being ordered or warned as aforesaid to go therefrom or having been removed therefrom as aforesaid, shall return thereto, such person shall be guilty of an offence against these rules and be liable to a penalty as provided for herein above.

VIII. Nothing in these rules shall take away, abridge or limit any remedy now existing other than by these rules or shall interfere with the power of the police or any authority legally existing for preventing punishable offences under any other law for the time being in force.

IX. (a) Every park or zoo official or director referred to herein above and every other officer exercising any of the powers conferred by these rules shall be deemed to be a public servant within the meaning of section '2' of the Indian Penal Code.

(b) No suit or other legal proceeding shall lie against the government or any of the park or zoo officials of or any damage caused or likely to be caused by anything which is in good faith done or intended to be done under these rules.

Powers of Zoo Directors

| S. No. | Item | Powers to be delegated to heads of (A), (B) & (C) category zoos | | |
|--------|--|---|--------|--------|
| | | (A) | (B) | (C) |
| | | (figures in rupees) | | |
| 1 | Works | | | |
| | (a) Capital | 25,000 | 10,000 | 1,000 |
| | (b) Recurring | Full | 2,000 | 500 |
| 2 | Purchase of animals | 10,000 | 5,000 | 200 |
| 3 | Exchange of animals with authorised zoos | Full | 10,000 | 1,000 |
| 4 | Exchange of animals with private parties | 1,000 | 500 | Nil |
| 5 | Writing off animals | Full | Full | .. |
| 6 | Purchase of medicines | Full | 5,000 | 100 |
| 7 | Purchase of feed | Full | Full | 10,000 |
| 8 | Purchase of stores, tools and equipment | 25,000 | 10,000 | 1,000 |
| 9 | Sale of surplus animals and product of animals | 2,000 | 1,000 | .. |
| 10 | Entertainment and hospitality charges | 1,000 | 200 | .. |
| 11 | Taxidermy charges | Full | Full | .. |
| 12 | Destruction of disabled animals not likely to recover and unfit for display. | Full | Full | .. |
| 13 | Appointment of Class III and Class IV servants | Full | Full | .. |
| 14 | Sanction of casual leave to all subordinate staff | Full | Full | .. |
| 15 | Purchase of books and periodicals | Full | 500 | 50 |
| 16 | Local purchase of stationery | 200 | 100 | 20 |
| 17 | Printing and stationery | 2,000 | 1,000 | .. |
| 18 | Publications | 5,000 | 2,000 | .. |
| 19 | Uniform and washing allowance | Full | Full | Full |
| 20 | Rewards and honoraria per annum per head | 500 | 200 | .. |
| 21 | Miscellaneous contingent expenditure | 2,000 | 500 | .. |

Animal Stock Register

Receipt

| S.No & Date | Species | Date of arrival in Zoo | No. arrived | | |
|-------------|---------|---------------------------|-------------|--------|-------|
| | | | Male | Female | Total |
| 1 | 2 | 3 | 4 | | |
| 1 | 1 | 1 | 1 | 1 | 2 |
| 2 | 2 | 2 | 2 | 2 | 4 |
| 3 | 3 | 3 | 3 | 3 | 6 |
| 4 | 4 | 4 | 4 | 4 | 8 |
| 5 | 5 | 5 | 5 | 5 | 10 |
| 6 | 6 | 6 | 6 | 6 | 12 |
| 7 | 7 | 7 | 7 | 7 | 14 |
| 8 | 8 | 8 | 8 | 8 | 16 |
| 9 | 9 | 9 | 9 | 9 | 18 |
| 10 | 10 | 10 | 10 | 10 | 20 |
| 11 | 11 | 11 | 11 | 11 | 22 |
| 12 | 12 | 12 | 12 | 12 | 24 |
| 13 | 13 | 13 | 13 | 13 | 26 |
| 14 | 14 | 14 | 14 | 14 | 28 |
| 15 | 15 | 15 | 15 | 15 | 30 |
| 16 | 16 | 16 | 16 | 16 | 32 |
| 17 | 17 | 17 | 17 | 17 | 34 |
| 18 | 18 | 18 | 18 | 18 | 36 |
| 19 | 19 | 19 | 19 | 19 | 38 |
| 20 | 20 | 20 | 20 | 20 | 40 |
| 21 | 21 | 21 | 21 | 21 | 42 |
| 22 | 22 | 22 | 22 | 22 | 44 |
| 23 | 23 | 23 | 23 | 23 | 46 |
| 24 | 24 | 24 | 24 | 24 | 48 |
| 25 | 25 | 25 | 25 | 25 | 50 |
| 26 | 26 | 26 | 26 | 26 | 52 |
| 27 | 27 | 27 | 27 | 27 | 54 |
| 28 | 28 | 28 | 28 | 28 | 56 |
| 29 | 29 | 29 | 29 | 29 | 58 |
| 30 | 30 | 30 | 30 | 30 | 60 |
| 31 | 31 | 31 | 31 | 31 | 62 |
| 32 | 32 | 32 | 32 | 32 | 64 |
| 33 | 33 | 33 | 33 | 33 | 66 |
| 34 | 34 | 34 | 34 | 34 | 68 |
| 35 | 35 | 35 | 35 | 35 | 70 |
| 36 | 36 | 36 | 36 | 36 | 72 |
| 37 | 37 | 37 | 37 | 37 | 74 |
| 38 | 38 | 38 | 38 | 38 | 76 |
| 39 | 39 | 39 | 39 | 39 | 78 |
| 40 | 40 | 40 | 40 | 40 | 80 |
| 41 | 41 | 41 | 41 | 41 | 82 |
| 42 | 42 | 42 | 42 | 42 | 84 |
| 43 | 43 | 43 | 43 | 43 | 86 |
| 44 | 44 | 44 | 44 | 44 | 88 |
| 45 | 45 | 45 | 45 | 45 | 90 |
| 46 | 46 | 46 | 46 | 46 | 92 |
| 47 | 47 | 47 | 47 | 47 | 94 |
| 48 | 48 | 48 | 48 | 48 | 96 |
| 49 | 49 | 49 | 49 | 49 | 98 |
| 50 | 50 | 50 | 50 | 50 | 100 |

| By Birth | Other Sources | | | Total No. in stock | Cost or estimated value |
|----------|---------------|----------|----------|--------------------|-------------------------|
| | Donation | Purchase | Exchange | | |
| | | 5 | | 6 | 7 |

Disposal

| Date | No. disposed of | | | How disposed of | | | Cost or estimated value |
|-------------------|-----------------|--------|-------|-----------------|----------|---------|-------------------------|
| | Male | Female | Total | Death | Others | | |
| | | | | | Donation | Sale | |
| 1 | 2 | | | | 3 | | 4 |
| | | | | | | | |
| Total disposed of | | | | Balance | | Remarks | |
| Male | Female | Total | Male | Female | Total | | |
| | 5 | | | 6 | | 7 | |

NOTE: In the remarks column give

1. Donor or donee in respect of donations;
2. Agency exchanged in case of exchange;
3. Cause of death and disposal of carcass in case of death.

Animal History Card/Sheet

———Zoological Park

Stock register S.No. Housed in.

Name

Scientific name

Sex

Vernacular name:

Distinguishing mark

Percentage

Habitat

Acquisition

1. How and from where acquired.
2. When acquired.
3. Age on arrival
4. Size and weight on arrival

Disposal

1. How and where disposed.
2. When disposed of
3. Age at disposal
4. Size and weight
5. Pathological findings in case of death

Normal temperature

Gestation period

Other information

Page 2

Date

Observation

Observer

Date

Observation

Observer

नमो भगवते वासुदेवाय

*Daily Report**Zoological Park*

Dated:

| S. No. | Item | Name of animal | Sex | Enclosure | Remarks |
|--------|--------------------------------|----------------|-----|-----------|---------|
| 1 | Receipts | | | | |
| 2 | Births | | | | |
| 3 | Transfer | | | | |
| 4 | Mating activity | | | | |
| 5 | Disposal | | | | |
| 6 | Death | | | | |
| 7 | Diet change | | | | |
| 8 | Other observation | | | | |
| 9 | Maintenance required | | | | |

10 Prophylactic measures adopted.

11 Sickness (Out-patients)

12 Sickness (In-patients)

Signature of
Reporting Officer.Signature of
Veterinary Officer.

General remarks of Director

Action taken.

Signature

Signature

Diet Sheet

Zoological Park

| S. No. | Name of animal | Beat No. | Alteration in number (+) or (—) | Alteration in diet. Des- cription/quantity. | Remarks |
|--------|----------------|----------|------------------------------------|--|---------|
|--------|----------------|----------|------------------------------------|--|---------|



सत्यमेव जयते

Signature

Treatment Sheet

_____ Zoological Park

Species. _____

| S. No. | Date | Personal name of animal | Symptoms (i) Disease (ii) Condition of animal | Diagnosis | Description | Reaction to treatment. | Remarks of V.O. |
|--------|------|-------------------------|---|-----------|-------------|------------------------|-----------------|
|--------|------|-------------------------|---|-----------|-------------|------------------------|-----------------|



सत्यमेव जयते

*Treatment Register (Hospital)***A. Out door patients**


| S.No. | Species | Symptom | Diagnosis | Treatment | Remarks |
|-------|---------|---------|-----------|-----------|---------|
|-------|---------|---------|-----------|-----------|---------|

B. Indoor patients

Veterinary Necropsy Protocol*Post-mortem Report*_____
Zoological Park

| No. | | | | | | | Date |
|---|-----------------|-----|---------------|-----|------|--------|------|
| Kind of animals (with remarks of identification if any) | Scientific name | Sex | Personal name | Age | Size | Weight | |
| Time, date and place of death. | | | | | | | |
| Time and date of post-mortem examination | | | | | | | |
| Short history of illness, if any. | | | | | | | |

A. General description**B. Organ-wise description of lesions.—**

- | | | |
|---|--|------------------------|
| (1) Head and neck |  | (a) Skull and brain |
| | | (b) Cervical vertebrae |
| (2) Thorax | | (a) Lungs |
| | | (b) Heart |
| | | (c) Ribs |
| (3) Abdomen | | (a) Liver |
| | | (b) Stomach |
| | | (c) Intestines |
| | | (d) Kidney |
| | | (e) Spleen |
| (4) Pelvic girdle | | (a) Uterus and Ovaries |
| | | (b) Bladder |
| | | (c) Genital passage |
| (5) Limbs | | (a) Fore limbs |
| | | (b) Hind limbs |
| (6) Any other special features: Biological tests done (if any) | | |
| (i) Blood | | |
| (ii) Urine | | |
| (iii) Discharges | | |
| (iv) Biopsy | | |
| (7) Opinion | | |
| (8) Instructions for disposal | | |

Place:

Date

Signature_____

Name_____

Designation_____

(Seal)

Post-mortem register

—————Zoological Park

Month:

| S. No. | Species | Date & time of death. | Cause of death | Disposal of carcass | | Death occurred in enclosure or hospital | Remarks |
|--------|---------|--------------------------|-------------------|---------------------|---------|--|---------|
| | | | | Buried | Skinned | | |



सत्यमेव जयते

Proforma for Stud-Book of Animals

SPECIES

HOW MANY INDIVIDUALS
Photograph of the species.

- (a) Name of individual
- (b) Sex
- (c) Date of birth
- (d) Place of birth
- (e) Parentage:
 - Father
 - Mother
- (f) Age/estimated age
- (g) Date of arrival at your collection.
- (h) Previous owner/s
- (i) Present owner
- (j) Date of death
- (k) Place of death
- (l) Post-mortem findings
- (m) What happened with the corpse.
- (n) Characteristic.
- (o) Remarks:
 - Mature
 - First mating
 - First delivery (Abortion)
 - First off-spring naturally raised
 - First off-spring had to be hand reared.

Stud-book No.
Stud-book No.,

NB.—The above proforma is to be filled for each individual separately and subsequently only the information required to be incorporated should be intimated in future reports.

GOVERNMENT OF INDIA

MINISTRY OF COMMERCE

Office of the Chief Controller of Imports & Exports (Udyog Bhavan, Maulana Azad Road)

New Delhi, the 23rd April, 1973.

EXPORT INSTRUCTION No. 46/73

To

The Jt. Chief Controller of Imports & Exports, Bombay/Calcutta/Madras/CLA, New Delhi.
 The Dy. Chief Controller of Imports & Exports, Kanpur/Ernakulam/Hyderabad/Ahmedabad/Bangalore/Panaji (Goa).
 The Controller of Imports & Exports, Visakhapatnam/Amritsar/Pondicherry/Srinagar (J & K) /Shillong/Rajkot
 The Export Trade controller, Tripura/Port Blair, Andamans.

SUBJECT:—Export of Wild Life and Wild Life Products during the 1973-74—Policy for

Reference Export Trade Control Amendment Order No. E(C)O, 1962/AM (100) dated the 21st April, 1973, published by the Ministry of Commerce in the Gazette of India Extraordinary of the same date, copy of which has already been sent separately. The export policy of wild life and wild life products has been finalised, in consultation with the Ministries of Commerce and Agriculture, taking into consideration the provisions of the Wild Life (Protection) Act, 1972. It has been decided that exports during 1973-74 will be regulated in the manner indicated in the schedule annexed to this Export Instruction.

2. The salient features of the policy are that all the wild life and wild life products have been brought under the purview of Exports (Control) Order, 1968 and *none of them will remain outside the scope of this order*. All items listed in Part B(i), (ii) and (iii) of Schedule annexed to this Export Instruction are covered by Serial No. 1(iii) of Part B of Schedule I to the Export (Control) Order, 1968 and export will be allowed only by the registered exporters of wild life and wild life products as approved by the Ministry of Agriculture from time to time through four major ports of Calcutta, Bombay, Madras and CLA, New Delhi. All the items listed in Part A of the Schedule annexed to this Export Instruction are covered by the entries against Serial No. 18 of Part A of Schedule I to the Export (Control) Order, 1968 and their export will not be allowed without prior approval of the Ministry of Agriculture.

3. Shed and dropped horns of deer and elk have not been separately classified under this policy. However, export of horns already procured through legal means and where the packages have been sealed and numbered in the presence of D.F.O. of the State or Union Territory concerned prior to 1-4-1973, may be permitted through the registered exporters as approved by the Ministry of Agriculture from time to time.

4. A suitable trade notice may be issued for the information of the trade without indicating the annual ceilings of quota items mentioned in Part B (ii) of the schedule.

5. The port licensing authority at Bombay, Calcutta, Madras and CLA, New Delhi may furnish a statement in the following form for each quarter beginning from April, 1973 to the Ministry of Commerce (Agri II Section) and Ministry of Agriculture (F.D. Section), with a copy to this office (Export Policy Division).

| S. No. | Name of the Shipper | Description of the species and products thereof such as skins, feathers etc. of each species passed for shipment during the month indicated for each item separately. | | | |
|--------|---------------------|---|-------|---|-------------|
| | | Quantity | Value | State of origin and particulars of certificate issued by Chief Wild life Warden/ C.C.F. | Destination |
| 1 | 2 | 3 | 4 | 5 | 6 |

The above statement may be furnished for each quarter including nil report, if any, by the 10th of the succeeding quarter.

(Sd.) K.S. Gupta

Joint Chief Controller of Imports & Exports,
 for Chief Controller of Imports & Exports.

(Issued from file No. 25/3/73-E. II).

Schedule indicating the export policy of wildlife and wildlife products during April, 1973—March, 1974 annexed to Export Instruction No. 46/73 dated 23rd April, 1973.

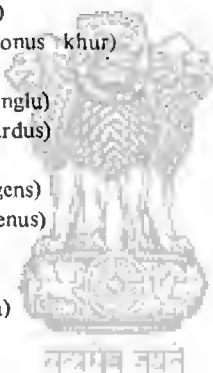
PART A

The export of the following items of wildlife (dead or alive or part thereof or product therefrom) will not normally be allowed. There species have been protected and included in Schedule I and Schedule II (Part II) to the Wild Life (Protection) Act, 1972. In exceptional circumstances, where the export is for specific scientific, educational or zoological research purposes, applications should be made to the Ministry of Agriculture at whose recommendations each and every case will be processed for issue of special export licence.

See S.No. A 18-I, of
Schedule I to E(C)O, 1968.

MAMMALS

1. Binturong (*Arctictis binturong*).
2. Black buck (*Antelope cervicapra*)
3. Brow-antlered deer or Thamin (*Cervus edli*)
4. Caracal (*Felis caracal*)
5. Cheetah (*Acinonyx jubatus*)
6. Clouded leopard (*Neofelis nebulosa*)
7. Dugong (*Dugong dugong*)
8. Fishing cat (*Felis viverrina*)
9. Golden cat (*Felis temmincki*)
10. Golden langur (*Presbytis geei*)
11. Hispid hare (*Caprolagus hispidus*)
12. Hoolock (*Hylobates hoolock*)
13. Indian lion (*Panthera leo persica*)
14. Indian wild ass (*Equus hemionus khur*)
15. Indian wolf (*Canis lupus*)
16. Kashmir stag (*Cervus elaphus hanglu*)
17. Leopard or panther (*Panthera pardus*)
18. Leopard cat (*Felis bengalensis*)
19. Lesser or red panda (*Ailurus fulgens*)
20. Lion-tailed macaque (*Macaca silenus*)
21. Loris (*Loris tardigradus*)
22. Lynx (*Felis lynx isabellinus*)
23. Malabar civet (*Viverra megaspila*)
24. Malabar cat (*Felis narmorata*)
25. Markhor (*Capra falconeri*)
26. Musk deer (*Moschus moschiferus*)
27. Ovis Ammon or Nyan (*Ovis ammon hadgsoni*)
28. Pallas's cat (*Felis manul*)
29. Pangolin (*Manis crassicaudata*)
30. Pygmy hog (*Sus salvanius*)
31. Rhinoceros (*Rhinoceros unicornis*)
32. Rusty spotted cat (*Felis rubiginosa*)
33. Slow loris (*Nycticebus coucang*)
34. Snow leopard (*Panthera uncia*),
35. Spotted linsang (*Prionoden pardicolor*)
36. Swamp deer (all sub-species of *Cervus duvauceli*)
37. Takin or Mishmi takin (*Budorcas taxicolor*)
38. Tibetan gazelle (*Procapra picticaudata*)
39. Tibetan wild ass (*Equus bemionus kiang*)
40. Tiger (*Panthera tigris*)
41. Urial or Shapu (*Ovis vignei*)
42. Wild buffalo (*Bubalus bubalis*)



See S.No. 18-II
of Schedule I
to E(C)O, 1968.

REPTILES

1. Crocodile (Including the Estuarine or Salt water crocodiles) (*Crocodilus porosus* and *Crocodilus palustris*)
2. Gharial (*Gavialis gangeticus*)
3. Indian python (*Python molurus*)
4. Poisonous snakes (e.g. Cobra, Krait, Viper, Echis)

See S.No. 18-III
of Schedule I to
E(C)O, 1968

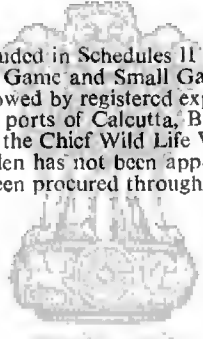
BIRDS

1. Bazas (*Avideda jeordoni* and *Aviceda leuphotates*)
2. Cheer pheasant (*Cetraus wallichii*)
3. Great Indian Bustard (*Choriotis nigriceps*)
4. Great Indian Hornbill (*Buceros bicornis*)
5. Jerdon's courser (*Cursorius bitorquatus*)
6. Jungle fowl, red and gray varieties (*Gallus gallus*) and (*Gallus sonneratii*).
7. Lammergeir (*Gypaetus baratus*)
8. Large falcons (*Falco peregrinus*, *Falco biarmicus* and *Falco chicquera*).
9. Mountain quail (*Ophrysia superciliosa*)
10. Narcondom Hornbill (*Rhyticeros (undulatus) norcondami*).
11. Nicobar megrapode (*Megapodius froycinet*)
12. Peafowl (*Pavo cristatus*) (excluding tail feathers and articles made therefrom).
13. Pinkheaded duck (*Rhodonessa caryophyllacea*).
14. Slater's monal (*Lophophorus selateri*)
15. Siberian white crane (*Grus leucogeranus*)
16. Tragopan pheasants (*Tragopan melanocephalus*), (*Tragopan blythii*, *Tragopan satyra*), (*Tragopan temminkei*)
17. White-eared pheasant (*Crossoptilon crossoptilon*)
18. White-bellied sea eagle (*Haliaeetus leucogaster*)
19. White-winged wood duck (*Cairina scutulata*)

PART B

(i) The species of wild life listed below have been included in Schedules II (Part I), III and IV to the Wild Life (Protection) Act, 1972 and their hunting is permissible under Special Game, Big Game and Small Game. The export of the following species of wild life (dead or alive or part thereof or produce therefrom) will be allowed by registered exporters of wild life and products *as approved by the Ministry of Agriculture from time to time only* through four major ports of Calcutta, Bombay, Madras and CoA, New Delhi. The export will be allowed only on production of a valid certificate issued by the Chief Wild Life Warden of the State concerned, or by the Chief Conservator of Forests of those states where the Chief Wild Life Warden has not been appointed to the effect that the wild life and their products such as skins and feathers etc. tendered for export have been procured through legal means:—

See S.No. B(1)
(iii) (a) of
Schedule I to
E(C)O, 1968

- 
1. Agra monitor lizard (*Varanus griseus daudin*)
 2. Andaman wild pig (*Sus andamanensis*)
 3. Barking deer or Muntjac (*Muntiacus muntjak*)
 4. Bengal porcupine (*Atherurus macrourus assamensis*)
 5. Bharal (*Ovis nayaaur*)
 6. Bison or Gaur (*Bos gaurus*)
 7. Capped langur (*Presbytis pileatus*)
 8. Chinkara or Indian gazelle (*Gazella gazella bannetti*).
 9. Chital (*Axis axis*)
 10. Crab eating macaque (*Macaca irus umbrosa*)
 11. Desert cat (*Felis libyca*)
 12. Desert fox (*Vulpus bucopus*)
 13. Dolphins (*Dolphins dephis*, *Platanista gangetica*)
 14. Ermine (*Mustela erminea*)
 15. Ferret badgers (*Melogale muschata* and *Melogale personata*).
 16. Flying squirrel (All species of the genus *Hylopetes*, *Petaurista*, *Belomys* and *Eupetaurus*).
 17. Four-horned antilope (*Tetracerus quadricornis*)
 18. Giant squirrel (*Ratufa macroura*, *Ratufa indica* and *Ratufa bicolor*).
 19. Goral (*Nemorhaedus goral hodgsoni*)
 20. Hare (Black naped, Common India, Desert, Himalayan mouse-hare).
 21. Himalayan black bear (*Selenarctos thibetanus*)
 22. Himalayan brown bear (*Ursus arctos*)
 23. Himalayan crestless porcupine (*Hystrix hodgsoni*)
 24. Himalayan ibex (*Capra ibex*).
 25. Himalayan tahr. (*Hemitragus jemlahicus*)

26. Hog deer (*Axis porcinus*)
27. Hyaena (*Hyaena hyaena*)
28. Indian elephant (*Elaphus maximus*)
29. Leaf monkey (*Presbytis phayrei*)
30. Malay or sub bear (*Helarctos malayanus*)
31. Marmot (*Marmota bobak himalayana* and *Marmota caudata*).
32. Marten (*Martes foina intermedia*, *Martes flavigula* and *Martes gwatkinsii*).
33. Mouse deer (*Tragulus meminna*)
34. Nilgai or Blue bull (*Boselaphus tragocamelus*)
35. Nilgiri langur (*Presbytis johni*)
36. Nilgiri Tahr (*Hemitragus hylocrius*)
37. Otters (*Lutra lutra*, *perspicillata*, *Aonyx cinerea*).
38. Pig-tailed macaque (*Macaca nemestrina*)
39. Ratel (*Mellivora capensis*)
40. Red fox (*Vulpes vulpes*)
41. Sambar (*Cervus unicolor*)
42. Serow (*Capricornis sumatraensis*)
43. Sloth bear (*Melursus ursinus*)
44. Stump-tailed macaque (*Macaca speciosa*)
45. Tibetan antelope or Chiru (*Pantholops hodgsoni*)
46. Tibetan fox (*Vulpes ferrilatus*)
47. Tibetan wolf (*Canis lupus*)
48. Water lizard (*Varanus salvator*)
49. Weasels (*Mustela sibirica*, *Mustela kathiah* and *Mustela altaica*)
50. Wild dog or Dhole (*Cuon alpinus*)
51. Wild pig (*Sus scrofa*)
52. Wild yak (*Bos grunniens*).

See S.No. B-I(iii)

(b) of Schedule I
to E(C)O, 1968.



BIRDS

(Other than those sub-species and species mentioned in Part A belonging to the families listed below.

- (i) Barbets (Capitonidae)
- (ii) Barn owl (Tytoninae)
- (iii) Blue birds (Irenidae)
- (iv) Buntings
- (v) Bustard quail (Turnicidae)
- (vi) Chaffinches (Fringillinae)
- (vii) Cranes (Gruidae)
- (viii) Ducks (Anatidae)
- (ix) Egrets (*Bulbulus ibis*, *Egretta alba*, *Egretta garzetta*, *Egretta intermedia*)
- (x) Emerald dove (Columbidae)
- (xi) Falcons (Falconidae)
- (xii) Finches (Fringillidae)
- (xiii) Flamingoes (Phoenicopteridae)
- (xiv) Fly catchers (Muscicapidae)
- (xv) Geese (Anatidae)
- (xvi) Gold finches and allies (Carduelinae)
- (xvii) Grouse (Pteroclidinae)
- (xviii) Hawks (Accipitridae)
- (xix) Hornbills (Bucerotidae)
- (xx) Ioras (Irenidae)
- (xxi) King fishers (*Ceryle rudis*, *Alcedo alitis*, *Haleyon smyrnensis*).
- (xxii) Megapodes (Megapodiidae)
- (xxiii) Minivets (Campephagidae)
- (xxiv) Orioles (Oriolidae)
- (xxv) Owls (Strigidae)
- (xxvi) Oystercatchers (Haematopodidae)
- (xxvii) Partridges (Phasianidae)

- (xxviii) Pelicans (Pelcecanidae)
 (xxix) Pheasants (Phasianidae)
 (xxx) Pigeons (except blue rock pigeon) (Columbidae)
 (xxxi) Pittas (Pittidae)
 (xxxii) Quail (Phasianidae)

- (xxxiii) Snipe (Charadriidae)
 (xxxiv) Sun-birds (Nectariniidae)
 (xxxv) Swans (Anatidae)
 (xxxvi) Thrushes (Muscicapidae)
 (xxxvii) Trogons (Trogonidae)

INSECTS

See S.No. B. I(iii)(c)

1. Butterflies and Moths. The policy will be announced later. Till then no export will be allowed.

PART B (II) quota items

The following items of wild life and products thereof will be regulated within annual ceiling indicated against each. The export will be allowed only by registered exporters of wild life and wild life products as approved by the Ministry of Agriculture from time to time and the export will be channelised through four major ports of Bombay, Calcutta, Madras and CIA New Delhi.

See B. I(iii) (d) 1 to 6
 of Schedule I to
 E(C)O, 1968.

- | | |
|---|----------------------------------|
| 1. Common langur (Scmnopithecus entellus) | 5,000 Nos. (Five thousand) |
| 2. Rhesus monkeys (Maaca mulatta) | 30,000 Nos. (Thirty thousand) |
| 3. Lizard skins (of lizards other than those specified else- where within schedule). | 6,00,000 (Six lakhs) |
| 4. Snake skins (of snakes other than those specified else- where in this sched- ule). | 5,00,000 (Five lakhs) |
| 5. Non-poisonous live snakes. | 50,000 Nos. (Fifty thousand) |

(i) Export of common langurs and rhesus monkeys will be allowed only by approved Indian Exporters of monkeys to recognised foreign consignees by air for medical research purposes only.

(ii) Export for pet zoo purposes will be allowed on merits.

(iii) Export of infant and juvenile common langurs and rhesus monkeys is not allowed.

Export of skins will be allowed during April, 73—March, 1974 within a ceiling by registered exporters of wildlife and wildlife products as approved by the Ministry of Agriculture from time to time on the basis of best years exports made during any one of the years 1970, 1971 and 1972. Separate detailed instructions are under issue.

Licensed freely within a limited ceiling on 'first come, first served' basis. Separate detailed instructions are under issue.

The export will be allowed freely on shipping bills by registered exporters of wildlife and wildlife products as approved by the Ministry of Agriculture from time to time to all permissible destinations within an overall ceiling of 50,000 numbers allocated to the following ports as under:-

| | |
|---------------------|-------------|
| J.C. Calcutta | 25,000 Nos. |
| J.C. CIA, New Delhi | 10,000 Nos. |
| J.C. Madras | 10,000 Nos. |
| J.C. Bombay | 5,000 Nos. |

Total : 50,000 Nos.

- | | |
|--|-----------------------------|
| 6. Peacock tail feathers (Pavo cristatus) | 12 (Twelve million Nos.) |
|--|-----------------------------|

Only tail feathers of peacock and articles made therefrom will be allowed against this ceiling. Crest feather and any other part of portion of peacock will not be allowed. The ceiling will be distributed proportionately to all registered exporters of wildlife and wildlife products as approved by the Ministry of Agriculture from time to time who were granted quotas during any one of the two licencing periods viz. April, 70—March 71 and April, 71—March, 72 on the same basis, on which the allocations were made in the last two shipping periods. On the basis of basic years already selected by the registered exporters of wildlife and wildlife products as approved by the Ministry of Agriculture from time to time, quotas have been worked out port-wise and firm-wise. (A copy of the statement showing the quota allocations to various quota holders port-wise is sent herewith). The ceiling of six million numbers has been distributed for shipment during the period April-September, 1973. Quota slips to the eligible shippers may be issued on 10-5-1973. A similar statement will be prepared for the balance quantity of six million Nos. after taking into consideration the unutilised/unshipped ceiling, if any, left on 30th September, 1973.

See No. B-1(iii)(e)

Part B (iii) of schedule
 I to the E(C)O, 1968.

Others

The other species of wild animals birds, reptiles and insects either covered by Schedule V to the Wild Life (Protection) Act, 1972 or those who do not figure in any of the schedules to the aforesaid Act are now controlled for export purposes and listed in Part B(I) (iii) of Schedule I of the Export (Control) Order, 1968. Their exports will also be regulated through four major ports of Bombay, Calcutta, Madras and CIA, New Delhi. The export will be allowed only by registered exporters of wildlife and wildlife products as approved by the Ministry of Agriculture from time to time.

APPENDIX XVIII

General and Statistical Information on Indian Zoos (As Extracted in Reply to the Questionnaires from various Zoos in India)

| S. No. | Name of the zoo | Year of establishment | Area in Acres | No. of animals | Annual visitation (Fig. in thousands) | Annual revenue in rupees |
|--------|---|-----------------------|---------------|------------------------------------|--|-----------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | | | | Mammals=M Birds=B Reptiles=R | | |
| 1 | Municipal Hill Garden Zoo, Kankaria, Ahmedabad | 1951 | 31 | M 450 B 2000 R 140 | 1046 | 90 |
| 2 | Nehru Natural History Section and Prakriti Darshan (Children's Zoo), Amreli | 1964 | 80' x 80' | M 20 B 75 | 67 | 1 |
| 3 | Maharaja Fatehsingh Zoo Trust Laxmi Villas Palace Compound, Baroda | 1958 | 2 | M 79 B 36 R 17 | 4 | 1.5 |
| 4 | Zoological Garden, Near Public Park, Bikaner | 1936 | 5 | M 146 B 348 | | |
| 5 | Veer mata Jijabai Bhosle Udyan, Byculla, Bombay | 1863 | 48 | M 177 | 7000 | 344.5 |
| 6 | Alipore Zoological Garden Calcutta | 1875 | 45 | M 374 B 1837 R 146 | 1800 | 1090 |
| 7 | Himalayan Zoological Park Tawar Parbat, Darjeeling | 1958 | 200 | M 69 | | |
| 8 | Delhi Zoological Park, New Delhi | 1955 | 232 | M 481 B 1025 R 21 | 1100 | 470 |
| 9 | Assam State Zoo-Cum-Botanical Garden, Dispur, Gauhati. | 1958 | 321 | M 242 B 315 R 88 | 275 | 85 |
| 10 | Nehru Zoological Park, South-West, Hyderabad | 1959 | 302 | M 441 B 1287 R 12 | 725 | 389 |
| 11 | Zoological Garden, Ram Niwas Bagh, Jaipur | 1875 | 13 | M 109 B 613 R 12 | | |
| 12 | Sakkar Bagh Zoo, Outside Majevali Gate, Junagadh | 1863 | 15 | M 90 B 49 R 4 | 600 | 29 |
| 13 | Kanpur Zoological Garden, Allen Forests, Kanpur. | 1971 | 184 | M 15 B 38 R 2 | | |
| 14 | Kota Zoo, Near Brij Cinema, Kota | 1954 | 4 | M 33 B 130 | | |
| 15 | Prince of Wales Zoological Gardens Trust, Banarsi Bagh, Lucknow | 1921 | 90 | M 163 B 1599 R 11 | 850 | 315 |
| 16 | Zoological Garden, Behind Moore Market, Madras | 1855 | 20 | M 210 B 266 R 19 | 700 | 300 |
| 17 | Sri Chamarajendra Zoological Gardens, Mysore | 1892 | 83 | M 82 B 116 R 12 | 642 | 467 |
| 18 | State Biological Park, Nandankanan (Orissa) | 1960 | 500 ha | M 323 B 611 R 21 | 220 | 928 |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|----|---|---------|-----------------|------------------|-----|-----|
| 19 | Mini Zoo, Pinjore (Haryana) | 1971-72 | 55 M B | 65 373 | 333 | |
| 20 | Peshwe Park Zoological Garden, Poona | 1951 | 7 M B R | 56 240 5 | 365 | |
| 21 | Mini Zoo, Renuka, District Sirmur (H.P.) | 1958-59 | 2.20 | | 10 | |
| 22 | Sarnath Deer Park, Sarnath (Varanasi) | 1956 | 25 M | 60 | | |
| 23 | National Himalayan Zoological Park, Simla | 1960-61 | 1.25 M B | 104 395 | 126 | |
| 24 | State Zoological Garden, Trivandrum | 1857 | 67 M B R | 190 176 31 | 575 | 155 |
| 25 | Zoological Garden, Sajjan Niwas Garden, Udaipur | 1935 | 13 M B | 125 490 | | |
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